

1 Table A Raw <sup>87</sup>Rb/<sup>86</sup>Sr and <sup>87</sup>Sr/<sup>86</sup>Sr isotopic ratios of Mica-Mg-NP-powder reference material analysed by LA ICP-MS/MS over multiple Sessions using either a 193 nm or 213 nm laser ablation system (see a column labelled as LA).

| spot          | <sup>87</sup> Rb/ <sup>86</sup> Sr | 2σ  | <sup>87</sup> Sr/ <sup>86</sup> Sr | 2σ    | Session   | LA    | spot         | <sup>87</sup> Rb/ <sup>86</sup> Sr | 2σ  | <sup>87</sup> Sr/ <sup>86</sup> Sr | 2σ    | Session   | LA    |
|---------------|------------------------------------|-----|------------------------------------|-------|-----------|-------|--------------|------------------------------------|-----|------------------------------------|-------|-----------|-------|
| MicaMg - 1.d  | 160.7                              | 1.3 | 1.903                              | 0.015 | Session 1 | 193nm | Mica-Mg - 15 | 163.1                              | 1.4 | 1.907                              | 0.016 | Session 2 | 193nm |
| MicaMg - 2.d  | 163                                | 1.2 | 1.896                              | 0.014 | Session 1 | 193nm | Mica-Mg - 16 | 163.4                              | 1.5 | 1.897                              | 0.015 | Session 2 | 193nm |
| MicaMg - 3.d  | 156.8                              | 1.2 | 1.893                              | 0.016 | Session 1 | 193nm | Mica-Mg - 17 | 163.7                              | 1.2 | 1.903                              | 0.013 | Session 2 | 193nm |
| MicaMg - 4.d  | 160                                | 1.2 | 1.884                              | 0.014 | Session 1 | 193nm | Mica-Mg - 18 | 164.6                              | 1.4 | 1.891                              | 0.015 | Session 2 | 193nm |
| MicaMg - 5.d  | 160.2                              | 1.2 | 1.893                              | 0.015 | Session 1 | 193nm | Mica-Mg - 19 | 153.7                              | 1.5 | 1.908                              | 0.019 | Session 2 | 193nm |
| MicaMg - 6.d  | 157.1                              | 1.1 | 1.895                              | 0.014 | Session 1 | 193nm | Mica-Mg - 20 | 161.9                              | 1.3 | 1.89                               | 0.016 | Session 2 | 193nm |
| MicaMg - 7.d  | 155.3                              | 1.1 | 1.899                              | 0.013 | Session 1 | 193nm | Mica-Mg - 21 | 160                                | 1.6 | 1.906                              | 0.014 | Session 2 | 193nm |
| MicaMg - 8.d  | 157.9                              | 1.2 | 1.914                              | 0.015 | Session 1 | 193nm | Mica-Mg - 22 | 162.3                              | 1.3 | 1.91                               | 0.016 | Session 2 | 193nm |
| MicaMg - 9.d  | 157                                | 1.1 | 1.889                              | 0.015 | Session 1 | 193nm | Mica-Mg - 23 | 162.7                              | 1.4 | 1.914                              | 0.014 | Session 2 | 193nm |
| MicaMg - 10.d | 154.4                              | 1.1 | 1.908                              | 0.015 | Session 1 | 193nm | Mica-Mg - 24 | 158                                | 1.4 | 1.907                              | 0.016 | Session 2 | 193nm |
| MicaMg - 11.d | 157.6                              | 1.4 | 1.917                              | 0.015 | Session 1 | 193nm | Mica-Mg - 25 | 157.7                              | 1.5 | 1.908                              | 0.015 | Session 2 | 193nm |
| MicaMg - 12.d | 155.6                              | 1.1 | 1.884                              | 0.012 | Session 1 | 193nm | Mica-Mg - 26 | 157.8                              | 1.5 | 1.905                              | 0.015 | Session 2 | 193nm |
| MicaMg - 13.d | 156.2                              | 1.2 | 1.893                              | 0.014 | Session 1 | 193nm | Mica-Mg - 27 | 157.4                              | 1.2 | 1.9                                | 0.016 | Session 2 | 193nm |
| MicaMg - 14.d | 153.8                              | 1.1 | 1.876                              | 0.016 | Session 1 | 193nm | Mica-Mg - 28 | 158.9                              | 1.4 | 1.909                              | 0.014 | Session 2 | 193nm |
| MicaMg - 15.d | 153.3                              | 1.1 | 1.893                              | 0.013 | Session 1 | 193nm | Mica-Mg - 29 | 160.6                              | 1.3 | 1.9                                | 0.015 | Session 2 | 193nm |
| MicaMg - 16.d | 156.5                              | 1.3 | 1.899                              | 0.017 | Session 1 | 193nm | Mica-Mg - 30 | 159.9                              | 1.1 | 1.895                              | 0.013 | Session 2 | 193nm |
| MicaMg - 17.d | 154.6                              | 1.2 | 1.901                              | 0.014 | Session 1 | 193nm | Mica-Mg - 31 | 161.8                              | 1.4 | 1.908                              | 0.015 | Session 2 | 193nm |
| MicaMg - 18.d | 154.6                              | 1.2 | 1.89                               | 0.014 | Session 1 | 193nm | Mica-Mg - 32 | 159.5                              | 1.3 | 1.911                              | 0.017 | Session 2 | 193nm |
| Mica-Mg - 1   | 160.8                              | 1.7 | 1.888                              | 0.021 | Session 2 | 193nm | Mica-Mg - 33 | 158.6                              | 1.2 | 1.899                              | 0.013 | Session 2 | 193nm |
| Mica-Mg - 2   | 165.1                              | 1.3 | 1.9                                | 0.016 | Session 2 | 193nm | Mica-Mg - 34 | 155.6                              | 1.2 | 1.896                              | 0.014 | Session 2 | 193nm |
| Mica-Mg - 3   | 163                                | 1.5 | 1.907                              | 0.016 | Session 2 | 193nm | Mica-Mg - 35 | 156                                | 1.1 | 1.9                                | 0.013 | Session 2 | 193nm |
| Mica-Mg - 4   | 163.8                              | 2   | 1.91                               | 0.024 | Session 2 | 193nm | Mica-Mg - 36 | 158                                | 1.6 | 1.905                              | 0.015 | Session 2 | 193nm |
| Mica-Mg - 5   | 167.5                              | 1.4 | 1.902                              | 0.017 | Session 2 | 193nm | Mica-Mg - 37 | 161.8                              | 1.4 | 1.902                              | 0.016 | Session 2 | 193nm |
| Mica-Mg - 6   | 166.7                              | 1.4 | 1.909                              | 0.014 | Session 2 | 193nm | Mica-Mg - 38 | 161.6                              | 1.5 | 1.901                              | 0.016 | Session 2 | 193nm |
| Mica-Mg - 7   | 164.4                              | 1.9 | 1.894                              | 0.022 | Session 2 | 193nm | Mica-Mg - 39 | 161.6                              | 1.3 | 1.916                              | 0.016 | Session 2 | 193nm |
| Mica-Mg - 8   | 165.6                              | 1.4 | 1.905                              | 0.016 | Session 2 | 193nm | Mica-Mg - 40 | 159.4                              | 1.4 | 1.909                              | 0.017 | Session 2 | 193nm |
| Mica-Mg - 9   | 159.5                              | 1.3 | 1.905                              | 0.014 | Session 2 | 193nm | Mica-Mg - 41 | 156.1                              | 2.1 | 1.893                              | 0.014 | Session 2 | 193nm |
| Mica-Mg - 10  | 162.6                              | 1.4 | 1.912                              | 0.016 | Session 2 | 193nm | Mica-Mg - 42 | 154.4                              | 1.4 | 1.884                              | 0.014 | Session 2 | 193nm |
| Mica-Mg - 11  | 159.9                              | 1.7 | 1.902                              | 0.014 | Session 2 | 193nm | Mica-Mg - 43 | 157.2                              | 1.3 | 1.903                              | 0.019 | Session 2 | 193nm |
| Mica-Mg - 12  | 162                                | 1.5 | 1.891                              | 0.016 | Session 2 | 193nm | Mica-Mg - 44 | 157.4                              | 1.4 | 1.893                              | 0.016 | Session 2 | 193nm |
| Mica-Mg - 13  | 159.1                              | 1.6 | 1.89                               | 0.016 | Session 2 | 193nm | Mica-Mg - 45 | 160.3                              | 1.5 | 1.908                              | 0.016 | Session 2 | 193nm |
| Mica-Mg - 14  | 160.5                              | 1.6 | 1.89                               | 0.017 | Session 2 | 193nm | Mica-Mg - 46 | 167.2                              | 1.5 | 1.891                              | 0.02  | Session 2 | 193nm |
| Mica-Mg - 47  | 169.9                              | 1.4 | 1.913                              | 0.017 | Session 2 | 193nm | Mica-Mg - 8  | 156.5                              | 1.3 | 1.9                                | 0.014 | Session 4 | 193nm |
| Mica-Mg - 48  | 166.1                              | 1.3 | 1.903                              | 0.014 | Session 2 | 193nm | Mica-Mg - 9  | 155.7                              | 1   | 1.904                              | 0.011 | Session 4 | 193nm |
| Mica-Mg - 1   | 164.5                              | 1.6 | 1.892                              | 0.021 | Session 3 | 193nm | Mica-Mg - 10 | 159.6                              | 1.1 | 1.906                              | 0.011 | Session 4 | 193nm |

Table A Raw  $^{87}\text{Rb}/^{86}\text{Sr}$  and  $^{87}\text{Sr}/^{86}\text{Sr}$  isotopic ratios of Mica-Mg-NP reference material analysed by LA ICP-MS/MS over multiple Sessions using either a 193 nm or 213 nm laser ablation system (see a column labelled as LA), Continued

| spot         | $^{87}\text{Rb}/^{86}\text{Sr}$ | $2\sigma$ | $^{87}\text{Sr}/^{86}\text{Sr}$ | $2\sigma$ | Session   | LA    | spot         | $^{87}\text{Rb}/^{86}\text{Sr}$ | $2\sigma$ | $^{87}\text{Sr}/^{86}\text{Sr}$ | $2\sigma$ | Session   | LA    |
|--------------|---------------------------------|-----------|---------------------------------|-----------|-----------|-------|--------------|---------------------------------|-----------|---------------------------------|-----------|-----------|-------|
| Mica-Mg - 2  | 168.1                           | 1.4       | 1.908                           | 0.017     | Session 3 | 193nm | Mica-Mg - 11 | 155                             | 1.2       | 1.905                           | 0.011     | Session 4 | 193nm |
| Mica-Mg - 3  | 168.3                           | 1.4       | 1.916                           | 0.018     | Session 3 | 193nm | Mica-Mg - 12 | 168.6                           | 1.2       | 1.916                           | 0.014     | Session 4 | 193nm |
| Mica-Mg - 4  | 164.4                           | 1.8       | 1.885                           | 0.018     | Session 3 | 193nm | Mica-Mg - 13 | 153.7                           | 1.2       | 1.902                           | 0.011     | Session 4 | 193nm |
| Mica-Mg - 5  | 164.3                           | 1.5       | 1.91                            | 0.018     | Session 3 | 193nm | Mica-Mg - 14 | 157.4                           | 1.2       | 1.905                           | 0.013     | Session 4 | 193nm |
| Mica-Mg - 6  | 164.4                           | 1.3       | 1.899                           | 0.016     | Session 3 | 193nm | Mica-Mg - 15 | 156.1                           | 1.2       | 1.902                           | 0.012     | Session 4 | 193nm |
| Mica-Mg - 7  | 161.4                           | 1.4       | 1.905                           | 0.015     | Session 3 | 193nm | Mica-Mg - 16 | 153                             | 1.2       | 1.893                           | 0.012     | Session 4 | 193nm |
| Mica-Mg - 8  | 158.4                           | 1.5       | 1.897                           | 0.016     | Session 3 | 193nm | Mica-Mg - 17 | 157                             | 0.93      | 1.897                           | 0.011     | Session 4 | 193nm |
| Mica-Mg - 9  | 164                             | 1.7       | 1.918                           | 0.016     | Session 3 | 193nm | Mica-Mg - 18 | 153.3                           | 1         | 1.89                            | 0.013     | Session 4 | 193nm |
| Mica-Mg - 10 | 163.7                           | 1.5       | 1.905                           | 0.016     | Session 3 | 193nm | Mica-Mg - 19 | 155.2                           | 1.2       | 1.901                           | 0.011     | Session 4 | 193nm |
| Mica-Mg - 11 | 162.6                           | 2.2       | 1.917                           | 0.023     | Session 3 | 193nm | Mica-Mg - 20 | 156.2                           | 1.2       | 1.899                           | 0.013     | Session 4 | 193nm |
| Mica-Mg - 12 | 163.6                           | 1.4       | 1.914                           | 0.019     | Session 3 | 193nm | Mica-Mg - 21 | 155.7                           | 1.4       | 1.896                           | 0.013     | Session 4 | 193nm |
| Mica-Mg - 13 | 164                             | 1.5       | 1.907                           | 0.016     | Session 3 | 193nm | Mica-Mg - 22 | 156.7                           | 1.1       | 1.904                           | 0.012     | Session 4 | 193nm |
| Mica-Mg - 14 | 164.7                           | 1.7       | 1.905                           | 0.018     | Session 3 | 193nm | Mica-Mg - 23 | 166.1                           | 1.3       | 1.901                           | 0.014     | Session 4 | 193nm |
| Mica-Mg - 15 | 161.6                           | 1.4       | 1.914                           | 0.015     | Session 3 | 193nm | Mica-Mg - 24 | 155.6                           | 1         | 1.892                           | 0.011     | Session 4 | 193nm |
| Mica-Mg - 16 | 162.6                           | 1.3       | 1.905                           | 0.017     | Session 3 | 193nm | Mica-Mg - 25 | 153.6                           | 1.1       | 1.902                           | 0.013     | Session 4 | 193nm |
| Mica-Mg - 17 | 160.8                           | 1.7       | 1.912                           | 0.015     | Session 3 | 193nm | Mica-Mg - 26 | 155.5                           | 1.1       | 1.892                           | 0.012     | Session 4 | 193nm |
| Mica-Mg - 18 | 157.2                           | 1.5       | 1.894                           | 0.016     | Session 3 | 193nm | Mica-Mg - 27 | 156.6                           | 1.3       | 1.895                           | 0.012     | Session 4 | 193nm |
| Mica-Mg - 19 | 159.8                           | 1.4       | 1.904                           | 0.016     | Session 3 | 193nm | Mica-Mg - 28 | 154.8                           | 1.4       | 1.908                           | 0.013     | Session 4 | 193nm |
| Mica-Mg - 20 | 158.8                           | 1.5       | 1.894                           | 0.014     | Session 3 | 193nm | Mica-Mg - 29 | 157.7                           | 1.1       | 1.908                           | 0.012     | Session 4 | 193nm |
| Mica-Mg - 21 | 160                             | 1.6       | 1.909                           | 0.016     | Session 3 | 193nm | Mica-Mg - 30 | 156                             | 1.1       | 1.902                           | 0.012     | Session 4 | 193nm |
| Mica-Mg - 22 | 163.9                           | 1.7       | 1.903                           | 0.017     | Session 3 | 193nm | Mica-Mg - 31 | 154.7                           | 1.1       | 1.892                           | 0.013     | Session 4 | 193nm |
| Mica-Mg - 23 | 164.4                           | 2.2       | 1.921                           | 0.025     | Session 3 | 193nm | Mica-Mg - 32 | 156.5                           | 1.3       | 1.909                           | 0.014     | Session 4 | 193nm |
| Mica-Mg - 24 | 160.5                           | 1.5       | 1.902                           | 0.017     | Session 3 | 193nm | Mica-Mg - 33 | 155.8                           | 1         | 1.901                           | 0.011     | Session 4 | 193nm |
| Mica-Mg - 1  | 168.4                           | 1.4       | 1.888                           | 0.015     | Session 4 | 193nm | Mica-Mg - 34 | 172.2                           | 1.7       | 1.909                           | 0.021     | Session 4 | 193nm |
| Mica-Mg - 2  | 159.5                           | 1.1       | 1.908                           | 0.015     | Session 4 | 193nm | Mica-Mg - 35 | 153.4                           | 1.2       | 1.88                            | 0.013     | Session 4 | 193nm |
| Mica-Mg - 3  | 159.1                           | 1.3       | 1.898                           | 0.017     | Session 4 | 193nm | Mica-Mg - 36 | 154.5                           | 1.3       | 1.909                           | 0.012     | Session 4 | 193nm |
| Mica-Mg - 4  | 160.7                           | 1.1       | 1.901                           | 0.012     | Session 4 | 193nm | Mica-Mg - 37 | 155.82                          | 0.97      | 1.901                           | 0.011     | Session 4 | 193nm |
| Mica-Mg - 5  | 156.2                           | 1.3       | 1.889                           | 0.014     | Session 4 | 193nm | Mica-Mg - 38 | 160.4                           | 1.2       | 1.911                           | 0.015     | Session 4 | 193nm |
| Mica-Mg - 6  | 155.7                           | 1.3       | 1.905                           | 0.013     | Session 4 | 193nm | Mica-Mg - 39 | 163.7                           | 1.2       | 1.903                           | 0.013     | Session 4 | 193nm |
| Mica-Mg - 7  | 159.2                           | 1.2       | 1.899                           | 0.012     | Session 4 | 193nm | Mica-Mg - 40 | 164.7                           | 1.2       | 1.901                           | 0.014     | Session 4 | 193nm |
| Mica-Mg - 41 | 162.8                           | 1.3       | 1.9                             | 0.013     | Session 4 | 193nm | Mica-Mg - 23 | 150.8                           | 1.1       | 1.902                           | 0.016     | Session 5 | 193nm |
| Mica-Mg - 42 | 162.9                           | 1.6       | 1.894                           | 0.014     | Session 4 | 193nm | Mica-Mg - 24 | 153.6                           | 2.1       | 1.91                            | 0.024     | Session 5 | 193nm |
| Mica-Mg - 43 | 158.7                           | 1.4       | 1.882                           | 0.015     | Session 4 | 193nm | Mica-Mg - 25 | 154.4                           | 1.2       | 1.892                           | 0.015     | Session 5 | 193nm |
| Mica-Mg - 44 | 159.9                           | 1.6       | 1.891                           | 0.013     | Session 4 | 193nm | Mica-Mg - 26 | 154.6                           | 1.2       | 1.902                           | 0.016     | Session 5 | 193nm |
| Mica-Mg - 45 | 168.7                           | 1.3       | 1.889                           | 0.013     | Session 4 | 193nm | Mica-Mg - 27 | 156.6                           | 1.5       | 1.893                           | 0.018     | Session 5 | 193nm |
| Mica-Mg - 46 | 163.2                           | 1.4       | 1.897                           | 0.015     | Session 4 | 193nm | Mica-Mg - 28 | 155.9                           | 1.5       | 1.892                           | 0.018     | Session 5 | 193nm |

Table A Raw  $^{87}\text{Rb}/^{86}\text{Sr}$  and  $^{87}\text{Sr}/^{86}\text{Sr}$  isotopic ratios of Mica-Mg-NP reference material analysed by LA ICP-MS/MS over multiple Sessions using either a 193 nm or 213 nm laser ablation system (see a column labelled as LA), Continued

| spot         | $^{87}\text{Rb}/^{86}\text{Sr}$ | $2\sigma$ | $^{87}\text{Sr}/^{86}\text{Sr}$ | $2\sigma$ | Session   | LA    | spot         | $^{87}\text{Rb}/^{86}\text{Sr}$ | $2\sigma$ | $^{87}\text{Sr}/^{86}\text{Sr}$ | $2\sigma$ | Session   | LA    |
|--------------|---------------------------------|-----------|---------------------------------|-----------|-----------|-------|--------------|---------------------------------|-----------|---------------------------------|-----------|-----------|-------|
| Mica-Mg - 47 | 155.1                           | 1         | 1.9                             | 0.012     | Session 4 | 193nm | Mica-Mg - 29 | 156.2                           | 1.6       | 1.915                           | 0.017     | Session 5 | 193nm |
| Mica-Mg - 48 | 166.9                           | 1.1       | 1.905                           | 0.013     | Session 4 | 193nm | Mica-Mg - 30 | 156.3                           | 1.4       | 1.896                           | 0.018     | Session 5 | 193nm |
| Mica-Mg - 49 | 161.8                           | 1.2       | 1.903                           | 0.014     | Session 4 | 193nm | Mica-Mg - 31 | 154                             | 1.6       | 1.906                           | 0.02      | Session 5 | 193nm |
| Mica-Mg - 50 | 161.5                           | 1.2       | 1.898                           | 0.011     | Session 4 | 193nm | Mica-Mg - 32 | 152.8                           | 1.6       | 1.898                           | 0.013     | Session 5 | 193nm |
| Mica-Mg - 51 | 160.8                           | 1.5       | 1.898                           | 0.013     | Session 4 | 193nm | Mica-Mg - 33 | 149.7                           | 1.4       | 1.908                           | 0.015     | Session 5 | 193nm |
| Mica-Mg - 1  | 162.3                           | 1.6       | 1.919                           | 0.016     | Session 5 | 193nm | Mica-Mg - 34 | 156.8                           | 1.7       | 1.901                           | 0.015     | Session 5 | 193nm |
| Mica-Mg - 2  | 156.3                           | 1.3       | 1.891                           | 0.015     | Session 5 | 193nm | Mica-Mg - 35 | 157.1                           | 1.3       | 1.9                             | 0.016     | Session 5 | 193nm |
| Mica-Mg - 3  | 154.5                           | 1.4       | 1.911                           | 0.015     | Session 5 | 193nm | Mica-Mg - 36 | 157.5                           | 1.6       | 1.905                           | 0.015     | Session 5 | 193nm |
| Mica-Mg - 4  | 156.7                           | 1.6       | 1.908                           | 0.014     | Session 5 | 193nm | Mica-Mg - 1  | 166.9                           | 1.4       | 1.893                           | 0.02      | Session 6 | 193nm |
| Mica-Mg - 5  | 155.1                           | 1.4       | 1.892                           | 0.015     | Session 5 | 193nm | Mica-Mg - 2  | 166.4                           | 2.2       | 1.887                           | 0.028     | Session 6 | 193nm |
| Mica-Mg - 6  | 160.4                           | 1.5       | 1.911                           | 0.019     | Session 5 | 193nm | Mica-Mg - 3  | 169.1                           | 1.4       | 1.901                           | 0.019     | Session 6 | 193nm |
| Mica-Mg - 7  | 158.9                           | 1.4       | 1.917                           | 0.017     | Session 5 | 193nm | Mica-Mg - 4  | 165.1                           | 1.3       | 1.907                           | 0.018     | Session 6 | 193nm |
| Mica-Mg - 8  | 156.9                           | 1.5       | 1.912                           | 0.018     | Session 5 | 193nm | Mica-Mg - 5  | 163.3                           | 1.3       | 1.904                           | 0.018     | Session 6 | 193nm |
| Mica-Mg - 9  | 157.8                           | 1.8       | 1.895                           | 0.016     | Session 5 | 193nm | Mica-Mg - 6  | 159.1                           | 1.5       | 1.9                             | 0.022     | Session 6 | 193nm |
| Mica-Mg - 10 | 159                             | 1.7       | 1.889                           | 0.015     | Session 5 | 193nm | Mica-Mg - 7  | 167.9                           | 1.8       | 1.906                           | 0.026     | Session 6 | 193nm |
| Mica-Mg - 11 | 155.8                           | 1.3       | 1.894                           | 0.015     | Session 5 | 193nm | Mica-Mg - 8  | 170.8                           | 1.4       | 1.91                            | 0.014     | Session 6 | 193nm |
| Mica-Mg - 12 | 156.8                           | 1.5       | 1.888                           | 0.016     | Session 5 | 193nm | Mica-Mg - 9  | 171.2                           | 1.5       | 1.919                           | 0.018     | Session 6 | 193nm |
| Mica-Mg - 13 | 155.6                           | 1.5       | 1.909                           | 0.016     | Session 5 | 193nm | Mica-Mg - 10 | 168                             | 1.7       | 1.881                           | 0.021     | Session 6 | 193nm |
| Mica-Mg - 14 | 150.2                           | 1.6       | 1.887                           | 0.015     | Session 5 | 193nm | Mica-Mg - 11 | 162.7                           | 2         | 1.895                           | 0.02      | Session 6 | 193nm |
| Mica-Mg - 15 | 155.2                           | 1.4       | 1.892                           | 0.018     | Session 5 | 193nm | Mica-Mg - 12 | 162.1                           | 1.2       | 1.901                           | 0.015     | Session 6 | 193nm |
| Mica-Mg - 16 | 159.8                           | 1.6       | 1.924                           | 0.018     | Session 5 | 193nm | Mica-Mg - 13 | 169                             | 1.9       | 1.929                           | 0.017     | Session 6 | 193nm |
| Mica-Mg - 17 | 158.7                           | 1.5       | 1.905                           | 0.016     | Session 5 | 193nm | Mica-Mg - 14 | 165                             | 1.4       | 1.903                           | 0.016     | Session 6 | 193nm |
| Mica-Mg - 18 | 158.4                           | 1.3       | 1.911                           | 0.014     | Session 5 | 193nm | Mica-Mg - 15 | 167                             | 1.7       | 1.88                            | 0.018     | Session 6 | 193nm |
| Mica-Mg - 19 | 154.3                           | 1.5       | 1.894                           | 0.016     | Session 5 | 193nm | Mica-Mg - 16 | 167.1                           | 1.8       | 1.902                           | 0.018     | Session 6 | 193nm |
| Mica-Mg - 20 | 155.4                           | 1.3       | 1.9                             | 0.015     | Session 5 | 193nm | Mica-Mg - 17 | 162.6                           | 1.4       | 1.896                           | 0.016     | Session 6 | 193nm |
| Mica-Mg - 21 | 155                             | 1.4       | 1.899                           | 0.016     | Session 5 | 193nm | Mica-Mg - 18 | 163.9                           | 1.4       | 1.903                           | 0.019     | Session 6 | 193nm |
| Mica-Mg - 22 | 155.1                           | 1.5       | 1.915                           | 0.019     | Session 5 | 193nm | Mica-Mg - 19 | 160.8                           | 1.5       | 1.88                            | 0.016     | Session 6 | 193nm |
| Mica-Mg - 20 | 152.8                           | 1.7       | 1.879                           | 0.02      | Session 6 | 193nm | Mica-Mg - 53 | 157.3                           | 1.4       | 1.898                           | 0.015     | Session 6 | 193nm |
| Mica-Mg - 21 | 157                             | 1.2       | 1.929                           | 0.017     | Session 6 | 193nm | Mica-Mg - 54 | 155.5                           | 1.9       | 1.89                            | 0.021     | Session 6 | 193nm |
| Mica-Mg - 22 | 157.3                           | 1.2       | 1.908                           | 0.015     | Session 6 | 193nm | Mica-Mg - 55 | 154.4                           | 1.5       | 1.906                           | 0.02      | Session 6 | 193nm |
| Mica-Mg - 23 | 160.5                           | 1.5       | 1.911                           | 0.017     | Session 6 | 193nm | Mica-Mg - 56 | 153.7                           | 1.3       | 1.899                           | 0.015     | Session 6 | 193nm |
| Mica-Mg - 24 | 159.7                           | 1.4       | 1.903                           | 0.016     | Session 6 | 193nm | Mica-Mg - 57 | 154.6                           | 1.3       | 1.912                           | 0.017     | Session 6 | 193nm |
| Mica-Mg - 25 | 158.5                           | 1.2       | 1.906                           | 0.016     | Session 6 | 193nm | Mica-Mg - 58 | 152.3                           | 1.1       | 1.896                           | 0.014     | Session 6 | 193nm |
| Mica-Mg - 26 | 158.6                           | 1.2       | 1.903                           | 0.016     | Session 6 | 193nm | Mica-Mg - 59 | 151.15                          | 0.96      | 1.902                           | 0.014     | Session 6 | 193nm |
| Mica-Mg - 27 | 158.4                           | 1.3       | 1.89                            | 0.018     | Session 6 | 193nm | Mica-Mg - 60 | 152.4                           | 1.3       | 1.908                           | 0.017     | Session 6 | 193nm |
| Mica-Mg - 28 | 157.8                           | 1.2       | 1.899                           | 0.015     | Session 6 | 193nm | Mica-Mg - 61 | 152.3                           | 1.4       | 1.913                           | 0.019     | Session 6 | 193nm |

Table A Raw  $^{87}\text{Rb}/^{86}\text{Sr}$  and  $^{87}\text{Sr}/^{86}\text{Sr}$  isotopic ratios of Mica-Mg-NP reference material analysed by LA ICP-MS/MS over multiple Sessions using either a 193 nm or 213 nm laser ablation system (see a column labelled as LA), Continued

| spot         | $^{87}\text{Rb}/^{86}\text{Sr}$ | $2\sigma$ | $^{87}\text{Sr}/^{86}\text{Sr}$ | $2\sigma$ | Session   | LA    | spot         | $^{87}\text{Rb}/^{86}\text{Sr}$ | $2\sigma$ | $^{87}\text{Sr}/^{86}\text{Sr}$ | $2\sigma$ | Session   | LA    |
|--------------|---------------------------------|-----------|---------------------------------|-----------|-----------|-------|--------------|---------------------------------|-----------|---------------------------------|-----------|-----------|-------|
| Mica-Mg - 29 | 157.5                           | 1.5       | 1.906                           | 0.016     | Session 6 | 193nm | Mica-Mg - 62 | 151.5                           | 1.4       | 1.886                           | 0.019     | Session 6 | 193nm |
| Mica-Mg - 30 | 154.3                           | 1         | 1.904                           | 0.013     | Session 6 | 193nm | Mica-Mg - 63 | 149.5                           | 1.6       | 1.888                           | 0.021     | Session 6 | 193nm |
| Mica-Mg - 31 | 153.7                           | 1.5       | 1.902                           | 0.016     | Session 6 | 193nm | Mica-Mg - 64 | 155.3                           | 1.2       | 1.898                           | 0.015     | Session 6 | 193nm |
| Mica-Mg - 32 | 158.9                           | 1.4       | 1.898                           | 0.013     | Session 6 | 193nm | Mica-Mg - 65 | 151.5                           | 1.2       | 1.881                           | 0.018     | Session 6 | 193nm |
| Mica-Mg - 33 | 158.9                           | 1.4       | 1.887                           | 0.015     | Session 6 | 193nm | Mica-Mg - 66 | 152.8                           | 1.1       | 1.904                           | 0.014     | Session 6 | 193nm |
| Mica-Mg - 34 | 159.4                           | 1.2       | 1.902                           | 0.015     | Session 6 | 193nm | Mica-Mg - 67 | 150.4                           | 1.3       | 1.894                           | 0.014     | Session 6 | 193nm |
| Mica-Mg - 35 | 157.9                           | 1.3       | 1.898                           | 0.014     | Session 6 | 193nm | Mica-Mg - 1  | 156.6                           | 1.9       | 1.899                           | 0.024     | Session 7 | 193nm |
| Mica-Mg - 36 | 152.4                           | 1.8       | 1.897                           | 0.02      | Session 6 | 193nm | Mica-Mg - 2  | 159.3                           | 1.8       | 1.89                            | 0.022     | Session 7 | 193nm |
| Mica-Mg - 37 | 156                             | 1.3       | 1.906                           | 0.016     | Session 6 | 193nm | Mica-Mg - 3  | 162.1                           | 1.6       | 1.906                           | 0.022     | Session 7 | 193nm |
| Mica-Mg - 38 | 154.3                           | 1.2       | 1.9                             | 0.015     | Session 6 | 193nm | Mica-Mg - 4  | 165.2                           | 1.4       | 1.908                           | 0.02      | Session 7 | 193nm |
| Mica-Mg - 39 | 153.9                           | 1.6       | 1.914                           | 0.026     | Session 6 | 193nm | Mica-Mg - 5  | 160.9                           | 1.6       | 1.905                           | 0.02      | Session 7 | 193nm |
| Mica-Mg - 40 | 151.9                           | 1.3       | 1.882                           | 0.016     | Session 6 | 193nm | Mica-Mg - 6  | 156.2                           | 2         | 1.898                           | 0.024     | Session 7 | 193nm |
| Mica-Mg - 41 | 153.9                           | 1.5       | 1.872                           | 0.019     | Session 6 | 193nm | Mica-Mg - 7  | 159.7                           | 1.5       | 1.912                           | 0.019     | Session 7 | 193nm |
| Mica-Mg - 42 | 156                             | 1.3       | 1.899                           | 0.019     | Session 6 | 193nm | Mica-Mg - 8  | 156.6                           | 2         | 1.87                            | 0.024     | Session 7 | 193nm |
| Mica-Mg - 43 | 158                             | 1.4       | 1.899                           | 0.015     | Session 6 | 193nm | Mica-Mg - 9  | 159.1                           | 1.7       | 1.872                           | 0.026     | Session 7 | 193nm |
| Mica-Mg - 44 | 155.2                           | 1.5       | 1.892                           | 0.018     | Session 6 | 193nm | Mica-Mg - 10 | 156.7                           | 1.6       | 1.87                            | 0.022     | Session 7 | 193nm |
| Mica-Mg - 45 | 155                             | 1.4       | 1.888                           | 0.014     | Session 6 | 193nm | Mica-Mg - 11 | 156.2                           | 1.8       | 1.907                           | 0.022     | Session 7 | 193nm |
| Mica-Mg - 46 | 151.9                           | 1.3       | 1.896                           | 0.014     | Session 6 | 193nm | Mica-Mg - 12 | 154.4                           | 1.9       | 1.889                           | 0.026     | Session 7 | 193nm |
| Mica-Mg - 47 | 152                             | 1.2       | 1.909                           | 0.014     | Session 6 | 193nm | Mica-Mg - 13 | 154.5                           | 1.8       | 1.864                           | 0.021     | Session 7 | 193nm |
| Mica-Mg - 48 | 151.7                           | 1.3       | 1.879                           | 0.017     | Session 6 | 193nm | Mica-Mg - 14 | 155.6                           | 1.7       | 1.889                           | 0.022     | Session 7 | 193nm |
| Mica-Mg - 49 | 152                             | 1.3       | 1.914                           | 0.017     | Session 6 | 193nm | Mica-Mg - 15 | 154.6                           | 1.7       | 1.902                           | 0.022     | Session 7 | 193nm |
| Mica-Mg - 50 | 152.2                           | 1.5       | 1.895                           | 0.015     | Session 6 | 193nm | Mica-Mg - 16 | 154.1                           | 1.6       | 1.915                           | 0.027     | Session 7 | 193nm |
| Mica-Mg - 51 | 153.8                           | 1         | 1.893                           | 0.015     | Session 6 | 193nm | Mica-Mg - 17 | 155.5                           | 1.8       | 1.897                           | 0.026     | Session 7 | 193nm |
| Mica-Mg - 52 | 157.5                           | 1.2       | 1.925                           | 0.015     | Session 6 | 193nm | Mica-Mg - 18 | 154.3                           | 1.7       | 1.894                           | 0.023     | Session 7 | 193nm |
| Mica-Mg - 19 | 155                             | 1.9       | 1.912                           | 0.024     | Session 7 | 193nm | Mica-Mg - 13 | 159.1                           | 1.6       | 1.918                           | 0.02      | Session 8 | 193nm |
| Mica-Mg - 20 | 156.2                           | 2.3       | 1.905                           | 0.021     | Session 7 | 193nm | Mica-Mg - 14 | 155                             | 2.1       | 1.884                           | 0.021     | Session 8 | 193nm |
| Mica-Mg - 21 | 151.8                           | 1.4       | 1.887                           | 0.019     | Session 7 | 193nm | Mica-Mg - 15 | 155.2                           | 1.9       | 1.904                           | 0.023     | Session 8 | 193nm |
| Mica-Mg - 22 | 156.1                           | 1.9       | 1.901                           | 0.021     | Session 7 | 193nm | Mica-Mg - 16 | 157.4                           | 1.9       | 1.903                           | 0.023     | Session 8 | 193nm |
| Mica-Mg - 23 | 152.9                           | 1.9       | 1.915                           | 0.026     | Session 7 | 193nm | Mica-Mg - 17 | 153.8                           | 2.1       | 1.905                           | 0.027     | Session 8 | 193nm |
| Mica-Mg - 24 | 150                             | 1.7       | 1.897                           | 0.022     | Session 7 | 193nm | Mica-Mg - 18 | 156.7                           | 2.2       | 1.884                           | 0.026     | Session 8 | 193nm |
| Mica-Mg - 25 | 154.7                           | 1.9       | 1.889                           | 0.023     | Session 7 | 193nm | Mica-Mg - 19 | 161                             | 2         | 1.925                           | 0.029     | Session 8 | 193nm |
| Mica-Mg - 26 | 150.3                           | 1.5       | 1.899                           | 0.021     | Session 7 | 193nm | Mica-Mg - 20 | 157                             | 1.8       | 1.915                           | 0.027     | Session 8 | 193nm |
| Mica-Mg - 27 | 149.6                           | 1.5       | 1.892                           | 0.021     | Session 7 | 193nm | Mica-Mg - 21 | 159.6                           | 1.9       | 1.906                           | 0.021     | Session 8 | 193nm |
| Mica-Mg - 28 | 154.4                           | 1.7       | 1.9                             | 0.022     | Session 7 | 193nm | Mica-Mg - 22 | 155.3                           | 2         | 1.896                           | 0.029     | Session 8 | 193nm |
| Mica-Mg - 29 | 158.4                           | 2.1       | 1.908                           | 0.021     | Session 7 | 193nm | Mica-Mg - 23 | 153.9                           | 2         | 1.878                           | 0.025     | Session 8 | 193nm |
| Mica-Mg - 30 | 154.9                           | 1.8       | 1.92                            | 0.027     | Session 7 | 193nm | Mica-Mg - 24 | 154.8                           | 2.5       | 1.912                           | 0.023     | Session 8 | 193nm |

Table A Raw  $^{87}\text{Rb}/^{86}\text{Sr}$  and  $^{87}\text{Sr}/^{86}\text{Sr}$  isotopic ratios of Mica-Mg-NP reference material analysed by LA ICP-MS/MS over multiple Sessions using either a 193 nm or 213 nm laser ablation system (see a column labelled as LA), Continued

| spot         | $^{87}\text{Rb}/^{86}\text{Sr}$ | $2\sigma$ | $^{87}\text{Sr}/^{86}\text{Sr}$ | $2\sigma$ | Session   | LA    | spot         | $^{87}\text{Rb}/^{86}\text{Sr}$ | $2\sigma$ | $^{87}\text{Sr}/^{86}\text{Sr}$ | $2\sigma$ | Session   | LA    |
|--------------|---------------------------------|-----------|---------------------------------|-----------|-----------|-------|--------------|---------------------------------|-----------|---------------------------------|-----------|-----------|-------|
| Mica-Mg - 31 | 154.2                           | 1.6       | 1.881                           | 0.021     | Session 7 | 193nm | Mica-Mg - 25 | 149.5                           | 1.9       | 1.897                           | 0.031     | Session 8 | 193nm |
| Mica-Mg - 32 | 154                             | 2         | 1.893                           | 0.024     | Session 7 | 193nm | Mica-Mg - 26 | 153.8                           | 1.7       | 1.888                           | 0.022     | Session 8 | 193nm |
| Mica-Mg - 33 | 152.2                           | 1.6       | 1.913                           | 0.026     | Session 7 | 193nm | Mica-Mg - 27 | 152                             | 1.6       | 1.887                           | 0.024     | Session 8 | 193nm |
| Mica-Mg - 34 | 151.8                           | 1.7       | 1.884                           | 0.022     | Session 7 | 193nm | Mica-Mg - 28 | 155.1                           | 1.5       | 1.891                           | 0.02      | Session 8 | 193nm |
| Mica-Mg - 35 | 152.2                           | 1.9       | 1.897                           | 0.023     | Session 7 | 193nm | Mica-Mg - 29 | 154.9                           | 2.1       | 1.881                           | 0.034     | Session 8 | 193nm |
| Mica-Mg - 36 | 154.2                           | 1.9       | 1.912                           | 0.018     | Session 7 | 193nm | Mica-Mg - 30 | 154.2                           | 2         | 1.898                           | 0.027     | Session 8 | 193nm |
| Mica-Mg - 37 | 150.8                           | 1.6       | 1.92                            | 0.022     | Session 7 | 193nm | Mica-Mg - 31 | 154                             | 2         | 1.9                             | 0.029     | Session 8 | 193nm |
| Mica-Mg - 38 | 153.5                           | 2         | 1.875                           | 0.029     | Session 7 | 193nm | Mica-Mg - 32 | 153.8                           | 2.2       | 1.879                           | 0.031     | Session 8 | 193nm |
| Mica-Mg - 39 | 156.5                           | 1.6       | 1.899                           | 0.021     | Session 7 | 193nm | Mica-Mg - 33 | 151.2                           | 2         | 1.9                             | 0.026     | Session 8 | 193nm |
| Mica-Mg - 1  | 161.5                           | 1.5       | 1.894                           | 0.019     | Session 8 | 193nm | Mica-Mg - 34 | 152.7                           | 2         | 1.895                           | 0.021     | Session 8 | 193nm |
| Mica-Mg - 2  | 156.9                           | 1.6       | 1.892                           | 0.019     | Session 8 | 193nm | Mica-Mg - 35 | 150.3                           | 1.7       | 1.88                            | 0.017     | Session 8 | 193nm |
| Mica-Mg - 3  | 157.1                           | 1.5       | 1.918                           | 0.021     | Session 8 | 193nm | Mica-Mg - 36 | 154.7                           | 1.8       | 1.903                           | 0.023     | Session 8 | 193nm |
| Mica-Mg - 4  | 158                             | 1.8       | 1.891                           | 0.02      | Session 8 | 193nm | Mica-Mg - 37 | 151.6                           | 1.5       | 1.886                           | 0.021     | Session 8 | 193nm |
| Mica-Mg - 5  | 156.1                           | 1.6       | 1.853                           | 0.025     | Session 8 | 193nm | Mica-Mg - 38 | 152.3                           | 1.7       | 1.892                           | 0.018     | Session 8 | 193nm |
| Mica-Mg - 6  | 161.7                           | 2         | 1.896                           | 0.021     | Session 8 | 193nm | Mica-Mg - 39 | 149.3                           | 1.8       | 1.876                           | 0.022     | Session 8 | 193nm |
| Mica-Mg - 7  | 163.6                           | 1.9       | 1.907                           | 0.02      | Session 8 | 193nm | 1-Mica Mg P  | 133.3                           | 1.3       | 1.881                           | 0.024     | Session 1 | 213nm |
| Mica-Mg - 8  | 163                             | 1.6       | 1.905                           | 0.018     | Session 8 | 193nm | 3-Mica Mg P  | 136.8                           | 1.9       | 1.9                             | 0.021     | Session 1 | 213nm |
| Mica-Mg - 9  | 159.4                           | 1.7       | 1.885                           | 0.019     | Session 8 | 193nm | 4-Mica Mg P  | 132.4                           | 1.7       | 1.883                           | 0.024     | Session 1 | 213nm |
| Mica-Mg - 10 | 160.8                           | 1.8       | 1.871                           | 0.023     | Session 8 | 193nm | 21-Mica Mg P | 138                             | 1.8       | 1.908                           | 0.023     | Session 1 | 213nm |
| Mica-Mg - 11 | 158.7                           | 1.6       | 1.89                            | 0.019     | Session 8 | 193nm | 22-Mica Mg P | 141.5                           | 2.2       | 1.892                           | 0.02      | Session 1 | 213nm |
| Mica-Mg - 12 | 156                             | 1.4       | 1.877                           | 0.02      | Session 8 | 193nm | 23-Mica Mg P | 138.4                           | 1.8       | 1.899                           | 0.02      | Session 1 | 213nm |
| 24-Mica Mg P | 141                             | 1.7       | 1.894                           | 0.015     | Session 1 | 213nm | MicaMgp - 14 | 149.1                           | 1.5       | 1.879                           | 0.012     | Session 2 | 213nm |
| 41-Mica Mg P | 137.2                           | 2.2       | 1.885                           | 0.023     | Session 1 | 213nm | MicaMgp - 15 | 145.3                           | 1.2       | 1.873                           | 0.011     | Session 2 | 213nm |
| 42-Mica Mg P | 137.4                           | 1.9       | 1.886                           | 0.022     | Session 1 | 213nm | MicaMgp - 25 | 149.2                           | 1.2       | 1.883                           | 0.01      | Session 2 | 213nm |
| 43-Mica Mg P | 142.6                           | 2.2       | 1.91                            | 0.024     | Session 1 | 213nm | MicaMgp - 26 | 145.4                           | 1.3       | 1.88                            | 0.01      | Session 2 | 213nm |
| 44-Mica Mg P | 139                             | 1.6       | 1.91                            | 0.021     | Session 1 | 213nm | MicaMgp - 27 | 142.4                           | 1         | 1.874                           | 0.01      | Session 2 | 213nm |
| 60-Mica Mg P | 144.1                           | 2.7       | 1.905                           | 0.02      | Session 1 | 213nm | MicaMgp - 34 | 146.8                           | 1.1       | 1.875                           | 0.01      | Session 2 | 213nm |
| 61-Mica Mg P | 137.3                           | 1.8       | 1.908                           | 0.021     | Session 1 | 213nm | MicaMgp - 35 | 145                             | 1.3       | 1.891                           | 0.011     | Session 2 | 213nm |
| 62-Mica Mg P | 142.8                           | 2.2       | 1.897                           | 0.021     | Session 1 | 213nm | MicaMgp - 36 | 146.19                          | 0.99      | 1.872                           | 0.01      | Session 2 | 213nm |
| MicaMgp - 1  | 148.1                           | 1.3       | 1.8809                          | 0.0099    | Session 2 | 213nm | MicaMgp - 37 | 140.9                           | 1         | 1.864                           | 0.011     | Session 2 | 213nm |
| MicaMgp - 2  | 139.79                          | 0.96      | 1.878                           | 0.01      | Session 2 | 213nm | MicaMgp - 38 | 143.1                           | 1.1       | 1.879                           | 0.01      | Session 2 | 213nm |
| MicaMgp - 3  | 151.8                           | 1.3       | 1.8766                          | 0.0095    | Session 2 | 213nm | MicaMgp - 39 | 144.3                           | 1.1       | 1.878                           | 0.011     | Session 2 | 213nm |
| MicaMgp - 13 | 142                             | 1         | 1.8699                          | 0.0092    | Session 2 | 213nm |              |                                 |           |                                 |           |           |       |

5 Table B  $^{87}\text{Rb}/^{86}\text{Sr}$  and  $^{87}\text{Sr}/^{86}\text{Sr}$  isotopic ratios for MDC analysed by LA-ICP-MS/MS over multiple Sessions and normalised to Mica-Mg-NP reference material, using either a 193 nm or 213 nm laser ablation system (see column labelled: LA)

| spot               | $^{87}\text{Rb}/^{86}\text{Sr}$ | $2\sigma$ | $^{87}\text{Sr}/^{86}\text{Sr}$ | $2\sigma$ | Session   | LA    | spot          | $^{87}\text{Rb}/^{86}\text{Sr}$ | $2\sigma$ | $^{87}\text{Sr}/^{86}\text{Sr}$ | $2\sigma$ | Session   | LA    |
|--------------------|---------------------------------|-----------|---------------------------------|-----------|-----------|-------|---------------|---------------------------------|-----------|---------------------------------|-----------|-----------|-------|
| MDC-mineral - 1.d  | 40.79                           | 0.3       | 1.0324                          | 0.007     | Session 1 | 193nm | MDC Mica - 33 | 40.31                           | 0.35      | 1.0295                          | 0.007     | Session 2 | 193nm |
| MDC-mineral - 2.d  | 41.83                           | 0.28      | 1.0326                          | 0.0082    | Session 1 | 193nm | MDC Mica - 34 | 39.38                           | 0.28      | 1.0236                          | 0.0064    | Session 2 | 193nm |
| MDC-mineral - 3.d  | 41.32                           | 0.28      | 1.0313                          | 0.0074    | Session 1 | 193nm | MDC Mica - 35 | 39.24                           | 0.3       | 1.0246                          | 0.0064    | Session 2 | 193nm |
| MDC-mineral - 4.d  | 41.27                           | 0.3       | 1.036                           | 0.0074    | Session 1 | 193nm | MDC Mica - 36 | 38.74                           | 0.33      | 1.0238                          | 0.0067    | Session 2 | 193nm |
| MDC-mineral - 5.d  | 41.8                            | 0.27      | 1.0406                          | 0.0069    | Session 1 | 193nm | MDC Mica - 38 | 39.49                           | 0.28      | 1.0197                          | 0.0072    | Session 2 | 193nm |
| MDC-mineral - 6.d  | 41.64                           | 0.35      | 1.0384                          | 0.0076    | Session 1 | 193nm | MDC Mica - 39 | 40.44                           | 0.36      | 1.025                           | 0.0076    | Session 2 | 193nm |
| MDC-mineral - 7.d  | 41.8                            | 0.28      | 1.036                           | 0.0064    | Session 1 | 193nm | MDC Mica - 40 | 39.61                           | 0.3       | 1.0302                          | 0.0065    | Session 2 | 193nm |
| MDC-mineral - 8.d  | 41.99                           | 0.28      | 1.0285                          | 0.0071    | Session 1 | 193nm | MDC Mica - 41 | 39.42                           | 0.29      | 1.0216                          | 0.0056    | Session 2 | 193nm |
| MDC-mineral - 9.d  | 41.82                           | 0.31      | 1.0254                          | 0.0073    | Session 1 | 193nm | MDC Mica - 42 | 39.24                           | 0.29      | 1.0193                          | 0.0066    | Session 2 | 193nm |
| MDC-mineral - 10.d | 41.79                           | 0.32      | 1.0354                          | 0.007     | Session 1 | 193nm | MDC Mica - 43 | 39.9                            | 0.3       | 1.0309                          | 0.0058    | Session 2 | 193nm |
| MDC-mineral - 11.d | 42.37                           | 0.3       | 1.0326                          | 0.0074    | Session 1 | 193nm | MDC Mica - 44 | 40.41                           | 0.28      | 1.0342                          | 0.0059    | Session 2 | 193nm |
| MDC-mineral - 12.d | 42.11                           | 0.35      | 1.024                           | 0.0078    | Session 1 | 193nm | MDC Mica - 45 | 40.65                           | 0.31      | 1.0281                          | 0.0059    | Session 2 | 193nm |
| MDC Mica - 1       | 38.38                           | 0.36      | 1.0303                          | 0.0073    | Session 2 | 193nm | MDC Mica - 46 | 41.11                           | 0.3       | 1.0275                          | 0.0062    | Session 2 | 193nm |
| MDC Mica - 2       | 38.52                           | 0.33      | 1.034                           | 0.0079    | Session 2 | 193nm | MDC Mica - 47 | 41.02                           | 0.35      | 1.033                           | 0.0068    | Session 2 | 193nm |
| MDC Mica - 3       | 38.51                           | 0.28      | 1.0308                          | 0.0059    | Session 2 | 193nm | MDC Mica - 48 | 41.15                           | 0.39      | 1.0362                          | 0.007     | Session 2 | 193nm |
| MDC Mica - 4       | 39.67                           | 0.29      | 1.0342                          | 0.0078    | Session 2 | 193nm | MDC Mica - 1  | 38.15                           | 0.4       | 1.0297                          | 0.0084    | Session 3 | 193nm |
| MDC Mica - 5       | 39.25                           | 0.28      | 1.028                           | 0.0084    | Session 2 | 193nm | MDC Mica - 2  | 38.87                           | 0.31      | 1.0311                          | 0.0079    | Session 3 | 193nm |
| MDC Mica - 6       | 39.53                           | 0.26      | 1.0325                          | 0.0071    | Session 2 | 193nm | MDC Mica - 3  | 38.58                           | 0.27      | 1.0276                          | 0.007     | Session 3 | 193nm |
| MDC Mica - 7       | 40                              | 0.31      | 1.0319                          | 0.0069    | Session 2 | 193nm | MDC Mica - 4  | 39.89                           | 0.28      | 1.0292                          | 0.0079    | Session 3 | 193nm |
| MDC Mica - 8       | 39.69                           | 0.29      | 1.0353                          | 0.0067    | Session 2 | 193nm | MDC Mica - 5  | 40.35                           | 0.26      | 1.0345                          | 0.0081    | Session 3 | 193nm |
| MDC Mica - 9       | 39.27                           | 0.27      | 1.0308                          | 0.0058    | Session 2 | 193nm | MDC Mica - 6  | 40.11                           | 0.27      | 1.0323                          | 0.0064    | Session 3 | 193nm |
| MDC Mica - 10      | 39.3                            | 0.32      | 1.0224                          | 0.0067    | Session 2 | 193nm | MDC Mica - 7  | 41.11                           | 0.31      | 1.04                            | 0.0074    | Session 3 | 193nm |
| MDC Mica - 11      | 39.13                           | 0.27      | 1.0302                          | 0.0068    | Session 2 | 193nm | MDC Mica - 8  | 40.4                            | 0.28      | 1.0258                          | 0.0074    | Session 3 | 193nm |
| MDC Mica - 12      | 38.93                           | 0.29      | 1.0239                          | 0.0069    | Session 2 | 193nm | MDC Mica - 9  | 40.61                           | 0.31      | 1.031                           | 0.0077    | Session 3 | 193nm |
| MDC Mica - 13      | 40.1                            | 0.32      | 1.0314                          | 0.0067    | Session 2 | 193nm | MDC Mica - 10 | 40.53                           | 0.28      | 1.0231                          | 0.0073    | Session 3 | 193nm |
| MDC Mica - 14      | 39.71                           | 0.32      | 1.0384                          | 0.0062    | Session 2 | 193nm | MDC Mica - 11 | 40.46                           | 0.27      | 1.0268                          | 0.0081    | Session 3 | 193nm |
| MDC Mica - 15      | 39.44                           | 0.3       | 1.0312                          | 0.0061    | Session 2 | 193nm | MDC Mica - 12 | 39.64                           | 0.25      | 1.0313                          | 0.0077    | Session 3 | 193nm |
| MDC Mica - 16      | 39.7                            | 0.26      | 1.0208                          | 0.0065    | Session 2 | 193nm | MDC Mica - 13 | 40.03                           | 0.25      | 1.0282                          | 0.0077    | Session 3 | 193nm |
| MDC Mica - 17      | 39.34                           | 0.28      | 1.0298                          | 0.0072    | Session 2 | 193nm | MDC Mica - 14 | 40.42                           | 0.32      | 1.0254                          | 0.0074    | Session 3 | 193nm |
| MDC Mica - 18      | 39.37                           | 0.29      | 1.0301                          | 0.0068    | Session 2 | 193nm | MDC Mica - 15 | 40.61                           | 0.31      | 1.0197                          | 0.0081    | Session 3 | 193nm |
| MDC Mica - 19      | 39.69                           | 0.3       | 1.0257                          | 0.0065    | Session 2 | 193nm | MDC Mica - 16 | 40.54                           | 0.28      | 1.0204                          | 0.008     | Session 3 | 193nm |
| MDC Mica - 20      | 39.9                            | 0.31      | 1.0325                          | 0.0067    | Session 2 | 193nm | MDC Mica - 17 | 41.59                           | 0.3       | 1.0269                          | 0.0079    | Session 3 | 193nm |
| MDC Mica - 21      | 40.71                           | 0.34      | 1.0267                          | 0.008     | Session 2 | 193nm | MDC Mica - 18 | 41.75                           | 0.37      | 1.0328                          | 0.0076    | Session 3 | 193nm |
| MDC Mica - 22      | 39.64                           | 0.27      | 1.0219                          | 0.0072    | Session 2 | 193nm | MDC Mica - 19 | 41.87                           | 0.36      | 1.0279                          | 0.0081    | Session 3 | 193nm |

Table. B  $^{87}\text{Rb}/^{86}\text{Sr}$  and  $^{87}\text{Sr}/^{86}\text{Sr}$  isotopic ratios for MDC analysed by LA-ICP-MS/MS over multiple Sessions and normalised to Mica-Mg-NP reference material, using either a 193 nm or 213 nm laser ablation system (see column labelled: LA)

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| spot          | $^{87}\text{Rb}/^{86}\text{Sr}$ | $2\sigma$ | $^{87}\text{Sr}/^{86}\text{Sr}$ | $2\sigma$ | Session   | LA    | spot          | $^{87}\text{Rb}/^{86}\text{Sr}$ | $2\sigma$ | $^{87}\text{Sr}/^{86}\text{Sr}$ | $2\sigma$ | Session   | LA    |
|---------------|---------------------------------|-----------|---------------------------------|-----------|-----------|-------|---------------|---------------------------------|-----------|---------------------------------|-----------|-----------|-------|
| MDC Mica - 23 | 40.39                           | 0.3       | 1.0309                          | 0.0078    | Session 2 | 193nm | MDC Mica - 20 | 41.16                           | 0.32      | 1.0289                          | 0.0086    | Session 3 | 193nm |
| MDC Mica - 24 | 39.17                           | 0.31      | 1.0265                          | 0.0064    | Session 2 | 193nm | MDC Mica - 21 | 41.91                           | 0.27      | 1.0298                          | 0.0087    | Session 3 | 193nm |
| MDC Mica - 25 | 39.36                           | 0.28      | 1.0281                          | 0.0065    | Session 2 | 193nm | MDCMICA - 1   | 40.66                           | 0.29      | 1.0225                          | 0.0077    | Session 3 | 193nm |
| MDC Mica - 26 | 39.49                           | 0.3       | 1.0353                          | 0.0066    | Session 2 | 193nm | MDCMICA - 2   | 40.33                           | 0.32      | 1.0349                          | 0.0072    | Session 3 | 193nm |
| MDC Mica - 27 | 39.36                           | 0.33      | 1.0298                          | 0.0067    | Session 2 | 193nm | MDCMICA - 3   | 40.62                           | 0.33      | 1.036                           | 0.011     | Session 3 | 193nm |
| MDC Mica - 28 | 40.29                           | 0.28      | 1.0341                          | 0.0072    | Session 2 | 193nm | MDC Mica - 22 | 41.61                           | 0.38      | 1.0265                          | 0.0074    | Session 3 | 193nm |
| MDC Mica - 29 | 39.88                           | 0.29      | 1.0277                          | 0.0069    | Session 2 | 193nm | MDC Mica - 23 | 40.8                            | 0.32      | 1.0308                          | 0.0074    | Session 3 | 193nm |
| MDC Mica - 30 | 40.25                           | 0.34      | 1.0306                          | 0.0064    | Session 2 | 193nm | MDC Mica - 24 | 41.88                           | 0.44      | 1.0299                          | 0.0086    | Session 3 | 193nm |
| MDC Mica - 31 | 40.19                           | 0.38      | 1.0373                          | 0.0062    | Session 2 | 193nm | MDC - 1       | 41.2                            | 0.3       | 1.0361                          | 0.0084    | Session 4 | 193nm |
| MDC Mica - 32 | 41.16                           | 0.37      | 1.0315                          | 0.0072    | Session 2 | 193nm | MDC - 2       | 39.69                           | 0.21      | 1.0269                          | 0.0062    | Session 4 | 193nm |
| MDC - 3       | 40.69                           | 0.26      | 1.0208                          | 0.0081    | Session 4 | 193nm | MDC - 48      | 40.41                           | 0.29      | 1.0339                          | 0.007     | Session 4 | 193nm |
| MDC - 4       | 40.48                           | 0.35      | 1.0359                          | 0.0066    | Session 4 | 193nm | MDC - 49      | 39.92                           | 0.3       | 1.0316                          | 0.0052    | Session 4 | 193nm |
| MDC - 5       | 40.49                           | 0.24      | 1.0315                          | 0.0063    | Session 4 | 193nm | MDC - 50      | 40.2                            | 0.39      | 1.0274                          | 0.0056    | Session 4 | 193nm |
| MDC - 6       | 39.96                           | 0.26      | 1.033                           | 0.0082    | Session 4 | 193nm | MDC - 51      | 40.6                            | 0.41      | 1.0267                          | 0.0057    | Session 4 | 193nm |
| MDC - 7       | 40.33                           | 0.29      | 1.0342                          | 0.0066    | Session 4 | 193nm | MDC 1 - 1     | 43.26                           | 0.27      | 1.0513                          | 0.0073    | Session 4 | 193nm |
| MDC - 8       | 40.08                           | 0.27      | 1.0388                          | 0.0066    | Session 4 | 193nm | MDC 1 - 2     | 42.46                           | 0.27      | 1.0462                          | 0.0071    | Session 4 | 193nm |
| MDC - 9       | 39.98                           | 0.26      | 1.034                           | 0.0062    | Session 4 | 193nm | MDC 1 - 3     | 42.3                            | 0.26      | 1.0517                          | 0.0066    | Session 4 | 193nm |
| MDC - 10      | 39.74                           | 0.27      | 1.0317                          | 0.006     | Session 4 | 193nm | MDC 1 - 4     | 42.36                           | 0.27      | 1.0453                          | 0.0058    | Session 4 | 193nm |
| MDC - 11      | 40.23                           | 0.3       | 1.0329                          | 0.0052    | Session 4 | 193nm | MDC 1 - 5     | 42.84                           | 0.28      | 1.0544                          | 0.0065    | Session 4 | 193nm |
| MDC - 12      | 39.96                           | 0.29      | 1.034                           | 0.0064    | Session 4 | 193nm | MDC 1 - 6     | 43.29                           | 0.24      | 1.0481                          | 0.0063    | Session 4 | 193nm |
| MDC - 13      | 40.75                           | 0.31      | 1.0338                          | 0.0063    | Session 4 | 193nm | MDC 1 - 7     | 43.23                           | 0.26      | 1.0531                          | 0.0071    | Session 4 | 193nm |
| MDC - 14      | 40.13                           | 0.33      | 1.0333                          | 0.0067    | Session 4 | 193nm | MDC 1 - 8     | 42.58                           | 0.25      | 1.0545                          | 0.0062    | Session 4 | 193nm |
| MDC - 15      | 40.45                           | 0.41      | 1.0304                          | 0.0061    | Session 4 | 193nm | MDC 1 - 9     | 42.74                           | 0.26      | 1.0557                          | 0.0066    | Session 4 | 193nm |
| MDC - 16      | 39.58                           | 0.34      | 1.031                           | 0.0056    | Session 4 | 193nm | MDC 1 - 10    | 42.93                           | 0.27      | 1.065                           | 0.0065    | Session 4 | 193nm |
| MDC - 17      | 41.42                           | 0.4       | 1.0279                          | 0.0069    | Session 4 | 193nm | MDC 2 - 1     | 41.56                           | 0.35      | 1.0416                          | 0.0062    | Session 4 | 193nm |
| MDC - 18      | 41.54                           | 0.34      | 1.0385                          | 0.0089    | Session 4 | 193nm | MDC 2 - 2     | 40.83                           | 0.29      | 1.0371                          | 0.007     | Session 4 | 193nm |
| MDC - 19      | 42.15                           | 0.3       | 1.0442                          | 0.0072    | Session 4 | 193nm | MDC 2 - 3     | 40.56                           | 0.31      | 1.0386                          | 0.0062    | Session 4 | 193nm |
| MDC - 20      | 41.97                           | 0.25      | 1.0383                          | 0.0083    | Session 4 | 193nm | MDC 2 - 4     | 40.5                            | 0.27      | 1.0344                          | 0.0059    | Session 4 | 193nm |
| MDC - 21      | 41.46                           | 0.3       | 1.0385                          | 0.008     | Session 4 | 193nm | MDC 2 - 5     | 40.25                           | 0.27      | 1.0387                          | 0.0056    | Session 4 | 193nm |
| MDC - 22      | 40.9                            | 0.26      | 1.0357                          | 0.0064    | Session 4 | 193nm | MDC 2 - 6     | 40.45                           | 0.3       | 1.0343                          | 0.0061    | Session 4 | 193nm |
| MDC - 23      | 40.67                           | 0.27      | 1.0282                          | 0.0081    | Session 4 | 193nm | MDC 2 - 7     | 40.88                           | 0.3       | 1.0308                          | 0.0057    | Session 4 | 193nm |
| MDC - 24      | 40.83                           | 0.33      | 1.0358                          | 0.0063    | Session 4 | 193nm | MDC 2 - 8     | 42.3                            | 0.29      | 1.0425                          | 0.0073    | Session 4 | 193nm |
| MDC - 25      | 41.07                           | 0.35      | 1.0346                          | 0.0069    | Session 4 | 193nm | MDC 2 - 9     | 41.3                            | 0.32      | 1.0404                          | 0.0063    | Session 4 | 193nm |

Table. B  $^{87}\text{Rb}/^{86}\text{Sr}$  and  $^{87}\text{Sr}/^{86}\text{Sr}$  isotopic ratios for MDC analysed by LA-ICP-MS/MS over multiple Sessions and normalised to Mica-Mg-NP reference material, using either a 193 nm or 213 nm laser ablation system (see column labelled: LA)

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| spot       | $^{87}\text{Rb}/^{86}\text{Sr}$ | $2\sigma$ | $^{87}\text{Sr}/^{86}\text{Sr}$ | $2\sigma$ | Session   | LA    | spot       | $^{87}\text{Rb}/^{86}\text{Sr}$ | $2\sigma$ | $^{87}\text{Sr}/^{86}\text{Sr}$ | $2\sigma$ | Session   | LA    |
|------------|---------------------------------|-----------|---------------------------------|-----------|-----------|-------|------------|---------------------------------|-----------|---------------------------------|-----------|-----------|-------|
| MDC - 26   | 40.86                           | 0.33      | 1.0307                          | 0.0074    | Session 4 | 193nm | MDC 2 - 10 | 40.17                           | 0.29      | 1.0369                          | 0.0058    | Session 4 | 193nm |
| MDC - 27   | 40.74                           | 0.29      | 1.0316                          | 0.0073    | Session 4 | 193nm | MDC 3 - 1  | 41.58                           | 0.26      | 1.0385                          | 0.0072    | Session 4 | 193nm |
| MDC - 28   | 40.41                           | 0.3       | 1.03                            | 0.0072    | Session 4 | 193nm | MDC 3 - 2  | 41.43                           | 0.26      | 1.0358                          | 0.0084    | Session 4 | 193nm |
| MDC - 29   | 40.91                           | 0.34      | 1.029                           | 0.0068    | Session 4 | 193nm | MDC 3 - 3  | 41.45                           | 0.23      | 1.0354                          | 0.0073    | Session 4 | 193nm |
| MDC - 30   | 40.81                           | 0.28      | 1.0337                          | 0.0065    | Session 4 | 193nm | MDC 3 - 4  | 41.65                           | 0.26      | 1.0417                          | 0.0071    | Session 4 | 193nm |
| MDC - 31   | 40.86                           | 0.32      | 1.0273                          | 0.0065    | Session 4 | 193nm | MDC 3 - 5  | 41.24                           | 0.28      | 1.0394                          | 0.0078    | Session 4 | 193nm |
| MDC - 32   | 41.96                           | 0.47      | 1.0335                          | 0.0089    | Session 4 | 193nm | MDC 3 - 6  | 41.12                           | 0.25      | 1.0406                          | 0.0064    | Session 4 | 193nm |
| MDC - 33   | 42.27                           | 0.44      | 1.0314                          | 0.0057    | Session 4 | 193nm | MDC 3 - 7  | 41.62                           | 0.32      | 1.037                           | 0.0075    | Session 4 | 193nm |
| MDC - 34   | 41.03                           | 0.35      | 1.0341                          | 0.0057    | Session 4 | 193nm | MDC 3 - 8  | 41.5                            | 0.31      | 1.0369                          | 0.0073    | Session 4 | 193nm |
| MDC - 35   | 41.24                           | 0.35      | 1.0317                          | 0.0069    | Session 4 | 193nm | MDC 3 - 9  | 41.94                           | 0.26      | 1.0403                          | 0.008     | Session 4 | 193nm |
| MDC - 36   | 40.9                            | 0.38      | 1.0391                          | 0.0074    | Session 4 | 193nm | MDC 3 - 10 | 41.6                            | 0.33      | 1.0434                          | 0.0072    | Session 4 | 193nm |
| MDC - 37   | 40.34                           | 0.38      | 1.0285                          | 0.007     | Session 4 | 193nm | MDC 4 - 1  | 43.92                           | 0.26      | 1.0265                          | 0.0068    | Session 4 | 193nm |
| MDC - 38   | 40.75                           | 0.36      | 1.0339                          | 0.0075    | Session 4 | 193nm | MDC 4 - 2  | 42.86                           | 0.32      | 1.0409                          | 0.0079    | Session 4 | 193nm |
| MDC - 39   | 39.86                           | 0.31      | 1.0235                          | 0.0064    | Session 4 | 193nm | MDC 4 - 3  | 43.88                           | 0.28      | 1.0441                          | 0.0089    | Session 4 | 193nm |
| MDC - 40   | 40.01                           | 0.35      | 1.0325                          | 0.0079    | Session 4 | 193nm | MDC 4 - 4  | 44.2                            | 0.27      | 1.0426                          | 0.0076    | Session 4 | 193nm |
| MDC - 41   | 40.95                           | 0.43      | 1.0188                          | 0.0098    | Session 4 | 193nm | MDC 4 - 5  | 41.93                           | 0.26      | 1.0361                          | 0.0071    | Session 4 | 193nm |
| MDC - 42   | 41.01                           | 0.36      | 1.0237                          | 0.0096    | Session 4 | 193nm | MDC 4 - 6  | 42.6                            | 0.27      | 1.0493                          | 0.0067    | Session 4 | 193nm |
| MDC - 43   | 40.92                           | 0.43      | 1.0366                          | 0.0076    | Session 4 | 193nm | MDC 4 - 7  | 43.42                           | 0.3       | 1.0405                          | 0.0076    | Session 4 | 193nm |
| MDC - 44   | 41.47                           | 0.39      | 1.0363                          | 0.0077    | Session 4 | 193nm | MDC 4 - 8  | 44.59                           | 0.35      | 1.0503                          | 0.0081    | Session 4 | 193nm |
| MDC - 45   | 40.74                           | 0.35      | 1.0364                          | 0.0067    | Session 4 | 193nm | MDC 4 - 9  | 43.57                           | 0.33      | 1.0403                          | 0.0096    | Session 4 | 193nm |
| MDC - 46   | 41.5                            | 0.41      | 1.0402                          | 0.008     | Session 4 | 193nm | MDC 4 - 10 | 44.76                           | 0.35      | 1.0395                          | 0.0079    | Session 4 | 193nm |
| MDC - 47   | 41.51                           | 0.39      | 1.0428                          | 0.0074    | Session 4 | 193nm | MDC 5 - 1  | 41.39                           | 0.25      | 1.0299                          | 0.0065    | Session 4 | 193nm |
| MDC 5 - 2  | 42.13                           | 0.28      | 1.0381                          | 0.0071    | Session 4 | 193nm | MDC - 1    | 40.46                           | 0.37      | 1.0363                          | 0.0058    | Session 6 | 193nm |
| MDC 5 - 3  | 41.92                           | 0.28      | 1.0386                          | 0.0057    | Session 4 | 193nm | MDC - 2    | 40.19                           | 0.37      | 1.0387                          | 0.0066    | Session 6 | 193nm |
| MDC 5 - 4  | 41.32                           | 0.27      | 1.0396                          | 0.0067    | Session 4 | 193nm | MDC - 3    | 39.89                           | 0.36      | 1.0324                          | 0.0062    | Session 6 | 193nm |
| MDC 5 - 5  | 41.17                           | 0.25      | 1.0396                          | 0.0068    | Session 4 | 193nm | MDC - 4    | 45.34                           | 0.28      | 1.0659                          | 0.0072    | Session 6 | 193nm |
| MDC 5 - 6  | 40.87                           | 0.28      | 1.0345                          | 0.0063    | Session 4 | 193nm | MDC - 5    | 44.46                           | 0.25      | 1.0593                          | 0.0072    | Session 6 | 193nm |
| MDC 5 - 7  | 41.59                           | 0.3       | 1.0397                          | 0.0073    | Session 4 | 193nm | MDC - 6    | 45.28                           | 0.36      | 1.0648                          | 0.0076    | Session 6 | 193nm |
| MDC 5 - 8  | 41.64                           | 0.27      | 1.0398                          | 0.0067    | Session 4 | 193nm | MDC - 7    | 41                              | 0.28      | 1.0393                          | 0.0074    | Session 6 | 193nm |
| MDC 5 - 9  | 41.92                           | 0.27      | 1.0363                          | 0.0071    | Session 4 | 193nm | MDC - 8    | 40.62                           | 0.25      | 1.0201                          | 0.0072    | Session 6 | 193nm |
| MDC 5 - 10 | 42.13                           | 0.27      | 1.0465                          | 0.0069    | Session 4 | 193nm | MDC - 9    | 40.65                           | 0.25      | 1.0151                          | 0.0072    | Session 6 | 193nm |
| MDC - 16   | 39.37                           | 0.36      | 1.0249                          | 0.0072    | Session 5 | 193nm | MDC - 10   | 40.2                            | 0.27      | 1.0166                          | 0.0064    | Session 6 | 193nm |
| MDC - 17   | 39.86                           | 0.31      | 1.0219                          | 0.0074    | Session 5 | 193nm | MDC - 11   | 40.61                           | 0.32      | 1.0141                          | 0.006     | Session 6 | 193nm |

Table. B  $^{87}\text{Rb}/^{86}\text{Sr}$  and  $^{87}\text{Sr}/^{86}\text{Sr}$  isotopic ratios for MDC analysed by LA-ICP-MS/MS over multiple Sessions and normalised to Mica-Mg-NP reference material, using either a 193 nm or 213 nm laser ablation system (see column labelled: LA)

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| spot     | $^{87}\text{Rb}/^{86}\text{Sr}$ | $2\sigma$ | $^{87}\text{Sr}/^{86}\text{Sr}$ | $2\sigma$ | Session   | LA    | spot     | $^{87}\text{Rb}/^{86}\text{Sr}$ | $2\sigma$ | $^{87}\text{Sr}/^{86}\text{Sr}$ | $2\sigma$ | Session   | LA    |
|----------|---------------------------------|-----------|---------------------------------|-----------|-----------|-------|----------|---------------------------------|-----------|---------------------------------|-----------|-----------|-------|
| MDC - 18 | 40.66                           | 0.33      | 1.031                           | 0.0082    | Session 5 | 193nm | MDC - 12 | 40.73                           | 0.34      | 1.0332                          | 0.0071    | Session 6 | 193nm |
| MDC - 19 | 40.39                           | 0.4       | 1.0276                          | 0.0075    | Session 5 | 193nm | MDC - 13 | 40.32                           | 0.36      | 1.021                           | 0.0055    | Session 6 | 193nm |
| MDC - 20 | 40.4                            | 0.36      | 1.0354                          | 0.0072    | Session 5 | 193nm | MDC - 14 | 40.19                           | 0.42      | 1.0183                          | 0.0061    | Session 6 | 193nm |
| MDC - 21 | 40.49                           | 0.34      | 1.0228                          | 0.0093    | Session 5 | 193nm | MDC - 15 | 40.08                           | 0.47      | 1.0246                          | 0.0063    | Session 6 | 193nm |
| MDC - 22 | 40.44                           | 0.4       | 1.0301                          | 0.0072    | Session 5 | 193nm | MDC - 16 | 40.25                           | 0.38      | 1.0267                          | 0.0066    | Session 6 | 193nm |
| MDC - 23 | 40.35                           | 0.35      | 1.0271                          | 0.0069    | Session 5 | 193nm | MDC - 17 | 40.35                           | 0.38      | 1.0189                          | 0.006     | Session 6 | 193nm |
| MDC - 24 | 40.76                           | 0.35      | 1.0377                          | 0.0073    | Session 5 | 193nm | MDC - 18 | 40.29                           | 0.45      | 1.0421                          | 0.0066    | Session 6 | 193nm |
| MDC - 25 | 39.81                           | 0.49      | 1.028                           | 0.0073    | Session 5 | 193nm | MDC - 19 | 39.99                           | 0.41      | 1.0343                          | 0.0069    | Session 6 | 193nm |
| MDC - 26 | 40.03                           | 0.49      | 1.0216                          | 0.0071    | Session 5 | 193nm | MDC - 20 | 40.02                           | 0.41      | 1.0323                          | 0.0066    | Session 6 | 193nm |
| MDC - 27 | 40.29                           | 0.45      | 1.0311                          | 0.0081    | Session 5 | 193nm | MDC - 21 | 40.9                            | 0.45      | 1.0273                          | 0.0069    | Session 6 | 193nm |
| MDC - 28 | 40.56                           | 0.49      | 1.0367                          | 0.0079    | Session 5 | 193nm | MDC - 22 | 40.69                           | 0.44      | 1.0251                          | 0.0061    | Session 6 | 193nm |
| MDC - 29 | 40.69                           | 0.46      | 1.0378                          | 0.0064    | Session 5 | 193nm | MDC - 23 | 40.6                            | 0.39      | 1.0367                          | 0.0068    | Session 6 | 193nm |
| MDC - 30 | 40.65                           | 0.51      | 1.0328                          | 0.0071    | Session 5 | 193nm | MDC - 24 | 40.42                           | 0.39      | 1.0318                          | 0.0056    | Session 6 | 193nm |
| MDC - 31 | 41.52                           | 0.39      | 1.0262                          | 0.0072    | Session 5 | 193nm | MDC - 25 | 39.93                           | 0.42      | 1.0367                          | 0.0059    | Session 6 | 193nm |
| MDC - 32 | 41.99                           | 0.49      | 1.0346                          | 0.0091    | Session 5 | 193nm | MDC - 26 | 40.15                           | 0.39      | 1.0399                          | 0.0065    | Session 6 | 193nm |
| MDC - 33 | 42.02                           | 0.34      | 1.0304                          | 0.0084    | Session 5 | 193nm | MDC - 27 | 40.3                            | 0.44      | 1.0289                          | 0.0064    | Session 6 | 193nm |
| MDC - 34 | 41.63                           | 0.43      | 1.0314                          | 0.0076    | Session 5 | 193nm | MDC - 28 | 40.05                           | 0.38      | 1.026                           | 0.0068    | Session 6 | 193nm |
| MDC - 35 | 41.59                           | 0.41      | 1.0285                          | 0.0083    | Session 5 | 193nm | MDC - 29 | 40.44                           | 0.41      | 1.0332                          | 0.0063    | Session 6 | 193nm |
| MDC - 36 | 41.72                           | 0.35      | 1.041                           | 0.0076    | Session 5 | 193nm | MDC - 30 | 40.15                           | 0.4       | 1.0264                          | 0.0061    | Session 6 | 193nm |
| MDC - 37 | 41.93                           | 0.38      | 1.0376                          | 0.0086    | Session 5 | 193nm | MDC - 31 | 40.5                            | 0.39      | 1.0403                          | 0.0063    | Session 6 | 193nm |
| MDC - 38 | 42                              | 0.37      | 1.0362                          | 0.0088    | Session 5 | 193nm | MDC - 32 | 40.09                           | 0.45      | 1.032                           | 0.006     | Session 6 | 193nm |
| MDC - 39 | 41.32                           | 0.46      | 1.0302                          | 0.0072    | Session 5 | 193nm | MDC - 33 | 40.42                           | 0.41      | 1.0301                          | 0.0057    | Session 6 | 193nm |
| MDC - 40 | 41.75                           | 0.42      | 1.0392                          | 0.008     | Session 5 | 193nm | MDC - 34 | 40.53                           | 0.42      | 1.0375                          | 0.0059    | Session 6 | 193nm |
| MDC - 41 | 42.06                           | 0.4       | 1.0303                          | 0.0086    | Session 5 | 193nm | MDC - 35 | 40.56                           | 0.38      | 1.0403                          | 0.0056    | Session 6 | 193nm |
| MDC - 42 | 41.78                           | 0.4       | 1.036                           | 0.0068    | Session 5 | 193nm | MDC - 36 | 40.47                           | 0.47      | 1.0361                          | 0.0063    | Session 6 | 193nm |
| MDC - 43 | 41.2                            | 0.4       | 1.026                           | 0.0063    | Session 5 | 193nm | MDC - 37 | 40.6                            | 0.46      | 1.0366                          | 0.0057    | Session 6 | 193nm |
| MDC - 44 | 41.65                           | 0.42      | 1.0416                          | 0.0069    | Session 5 | 193nm | MDC - 38 | 40.78                           | 0.35      | 1.0304                          | 0.0063    | Session 6 | 193nm |
| MDC - 45 | 41.06                           | 0.44      | 1.0347                          | 0.0083    | Session 5 | 193nm | MDC - 39 | 40.64                           | 0.41      | 1.0291                          | 0.0065    | Session 6 | 193nm |
| MDC - 46 | 41.47                           | 0.52      | 1.0353                          | 0.0073    | Session 5 | 193nm | MDC - 40 | 40.9                            | 0.45      | 1.0321                          | 0.0057    | Session 6 | 193nm |
| MDC - 47 | 41.87                           | 0.55      | 1.0427                          | 0.0063    | Session 5 | 193nm | MDC - 41 | 40.77                           | 0.46      | 1.037                           | 0.0053    | Session 6 | 193nm |
| MDC - 48 | 41.46                           | 0.5       | 1.0376                          | 0.0069    | Session 5 | 193nm | MDC - 42 | 41.03                           | 0.48      | 1.0435                          | 0.0057    | Session 6 | 193nm |
| MDC - 49 | 40.28                           | 0.32      | 1.0248                          | 0.0079    | Session 5 | 193nm | MDC - 43 | 40.68                           | 0.41      | 1.035                           | 0.0059    | Session 6 | 193nm |
| MDC - 50 | 41.1                            | 0.33      | 1.0345                          | 0.0086    | Session 5 | 193nm | MDC - 44 | 40.71                           | 0.44      | 1.044                           | 0.0062    | Session 6 | 193nm |

Table. B  $^{87}\text{Rb}/^{86}\text{Sr}$  and  $^{87}\text{Sr}/^{86}\text{Sr}$  isotopic ratios for MDC analysed by LA-ICP-MS/MS over multiple Sessions and normalised to Mica-Mg-NP reference material, using either a 193 nm or 213 nm laser ablation system (see column labelled: LA)

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| spot     | $^{87}\text{Rb}/^{86}\text{Sr}$ | $2\sigma$ | $^{87}\text{Sr}/^{86}\text{Sr}$ | $2\sigma$ | Session   | LA    | spot     | $^{87}\text{Rb}/^{86}\text{Sr}$ | $2\sigma$ | $^{87}\text{Sr}/^{86}\text{Sr}$ | $2\sigma$ | Session   | LA    |
|----------|---------------------------------|-----------|---------------------------------|-----------|-----------|-------|----------|---------------------------------|-----------|---------------------------------|-----------|-----------|-------|
| MDC - 51 | 41.47                           | 0.39      | 1.0339                          | 0.0093    | Session 5 | 193nm | MDC - 45 | 40.66                           | 0.4       | 1.0313                          | 0.006     | Session 6 | 193nm |
| MDC - 46 | 40.58                           | 0.45      | 1.0367                          | 0.0062    | Session 6 | 193nm | MDC - 22 | 39.3                            | 0.25      | 1.0395                          | 0.0086    | Session 7 | 193nm |
| MDC - 47 | 40.21                           | 0.43      | 1.0382                          | 0.0061    | Session 6 | 193nm | MDC - 23 | 39.67                           | 0.36      | 1.04                            | 0.011     | Session 7 | 193nm |
| MDC - 48 | 40.92                           | 0.47      | 1.0398                          | 0.0062    | Session 6 | 193nm | MDC - 24 | 39.52                           | 0.41      | 1.036                           | 0.01      | Session 7 | 193nm |
| MDC - 49 | 40.91                           | 0.43      | 1.0438                          | 0.0066    | Session 6 | 193nm | MDC - 25 | 39.14                           | 0.24      | 1.0267                          | 0.0084    | Session 7 | 193nm |
| MDC - 50 | 40.53                           | 0.38      | 1.0402                          | 0.0057    | Session 6 | 193nm | MDC - 26 | 39.81                           | 0.35      | 1.0389                          | 0.0092    | Session 7 | 193nm |
| MDC - 51 | 40.35                           | 0.38      | 1.0308                          | 0.0059    | Session 6 | 193nm | MDC - 27 | 40.47                           | 0.4       | 1.03                            | 0.013     | Session 7 | 193nm |
| MDC - 52 | 39.92                           | 0.45      | 1.0298                          | 0.0064    | Session 6 | 193nm | MDC - 28 | 39.64                           | 0.33      | 1.0513                          | 0.0082    | Session 7 | 193nm |
| MDC - 53 | 40.03                           | 0.37      | 1.0333                          | 0.0063    | Session 6 | 193nm | MDC - 29 | 39.24                           | 0.3       | 1.0287                          | 0.0095    | Session 7 | 193nm |
| MDC - 54 | 40.26                           | 0.45      | 1.0376                          | 0.006     | Session 6 | 193nm | MDC - 30 | 38.9                            | 0.32      | 1.0267                          | 0.0095    | Session 7 | 193nm |
| MDC - 55 | 40.4                            | 0.45      | 1.0348                          | 0.0059    | Session 6 | 193nm | MDC - 31 | 39.08                           | 0.27      | 1.0376                          | 0.0086    | Session 7 | 193nm |
| MDC - 56 | 39.59                           | 0.41      | 1.0331                          | 0.0058    | Session 6 | 193nm | MDC - 32 | 40.16                           | 0.38      | 1.031                           | 0.012     | Session 7 | 193nm |
| MDC - 57 | 40                              | 0.43      | 1.0353                          | 0.0057    | Session 6 | 193nm | MDC - 33 | 39.14                           | 0.32      | 1.0287                          | 0.009     | Session 7 | 193nm |
| MDC - 58 | 39.86                           | 0.41      | 1.0338                          | 0.006     | Session 6 | 193nm | MDC - 34 | 39.16                           | 0.32      | 1.0222                          | 0.0095    | Session 7 | 193nm |
| MDC - 59 | 39.29                           | 0.53      | 1.0374                          | 0.006     | Session 6 | 193nm | MDC - 35 | 38.71                           | 0.29      | 1.0303                          | 0.0077    | Session 7 | 193nm |
| MDC - 60 | 40.01                           | 0.4       | 1.0409                          | 0.0065    | Session 6 | 193nm | MDC - 36 | 37.94                           | 0.28      | 1.0242                          | 0.0086    | Session 7 | 193nm |
| MDC - 61 | 40.22                           | 0.44      | 1.0433                          | 0.0058    | Session 6 | 193nm | MDC - 37 | 37.87                           | 0.26      | 1.0304                          | 0.0076    | Session 7 | 193nm |
| MDC - 62 | 40.15                           | 0.42      | 1.0355                          | 0.0062    | Session 6 | 193nm | MDC - 38 | 38.07                           | 0.34      | 1.0266                          | 0.0076    | Session 7 | 193nm |
| MDC - 63 | 40.41                           | 0.41      | 1.0414                          | 0.0057    | Session 6 | 193nm | MDC - 39 | 39.5                            | 0.29      | 1.0311                          | 0.008     | Session 7 | 193nm |
| MDC - 64 | 40.63                           | 0.41      | 1.04                            | 0.0058    | Session 6 | 193nm | MDC - 1  | 40.58                           | 0.28      | 1.0269                          | 0.0082    | Session 8 | 193nm |
| MDC - 65 | 39.86                           | 0.42      | 1.0348                          | 0.0054    | Session 6 | 193nm | MDC - 2  | 40.44                           | 0.33      | 1.0184                          | 0.0097    | Session 8 | 193nm |
| MDC - 66 | 40.14                           | 0.47      | 1.0338                          | 0.0064    | Session 6 | 193nm | MDC - 3  | 40.83                           | 0.26      | 1.0377                          | 0.0075    | Session 8 | 193nm |
| MDC - 67 | 39.76                           | 0.46      | 1.034                           | 0.0065    | Session 6 | 193nm | MDC - 4  | 40.99                           | 0.32      | 1.0324                          | 0.0079    | Session 8 | 193nm |
| MDC - 68 | 39.83                           | 0.41      | 1.0397                          | 0.0067    | Session 6 | 193nm | MDC - 5  | 41.71                           | 0.36      | 1.045                           | 0.011     | Session 8 | 193nm |
| MDC - 69 | 39.76                           | 0.43      | 1.0319                          | 0.0065    | Session 6 | 193nm | MDC - 6  | 41.49                           | 0.32      | 1.0394                          | 0.0099    | Session 8 | 193nm |
| MDC - 1  | 40.45                           | 0.32      | 1.041                           | 0.01      | Session 7 | 193nm | MDC - 7  | 40.48                           | 0.35      | 1.0333                          | 0.0079    | Session 8 | 193nm |
| MDC - 2  | 40.13                           | 0.28      | 1.047                           | 0.01      | Session 7 | 193nm | MDC - 8  | 41.43                           | 0.35      | 1.0415                          | 0.0082    | Session 8 | 193nm |
| MDC - 3  | 40                              | 0.24      | 1.0395                          | 0.0081    | Session 7 | 193nm | MDC - 9  | 41.37                           | 0.36      | 1.0279                          | 0.0095    | Session 8 | 193nm |
| MDC - 4  | 39.84                           | 0.28      | 1.034                           | 0.01      | Session 7 | 193nm | MDC - 10 | 41.42                           | 0.35      | 1.035                           | 0.0093    | Session 8 | 193nm |
| MDC - 5  | 39.85                           | 0.28      | 1.0313                          | 0.0089    | Session 7 | 193nm | MDC - 11 | 41.5                            | 0.34      | 1.038                           | 0.01      | Session 8 | 193nm |
| MDC - 6  | 39.34                           | 0.27      | 1.0328                          | 0.0074    | Session 7 | 193nm | MDC - 12 | 41.48                           | 0.33      | 1.04                            | 0.0081    | Session 8 | 193nm |
| MDC - 7  | 39.73                           | 0.29      | 1.033                           | 0.011     | Session 7 | 193nm | MDC - 13 | 41.68                           | 0.32      | 1.0451                          | 0.0084    | Session 8 | 193nm |
| MDC - 8  | 39.72                           | 0.36      | 1.033                           | 0.014     | Session 7 | 193nm | MDC - 14 | 40.76                           | 0.3       | 1.0336                          | 0.0064    | Session 8 | 193nm |

Table. B  $^{87}\text{Rb}/^{86}\text{Sr}$  and  $^{87}\text{Sr}/^{86}\text{Sr}$  isotopic ratios for MDC analysed by LA-ICP-MS/MS over multiple Sessions and normalised to Mica-Mg-NP reference material, using either a 193 nm or 213 nm laser ablation system (see column labelled: LA)

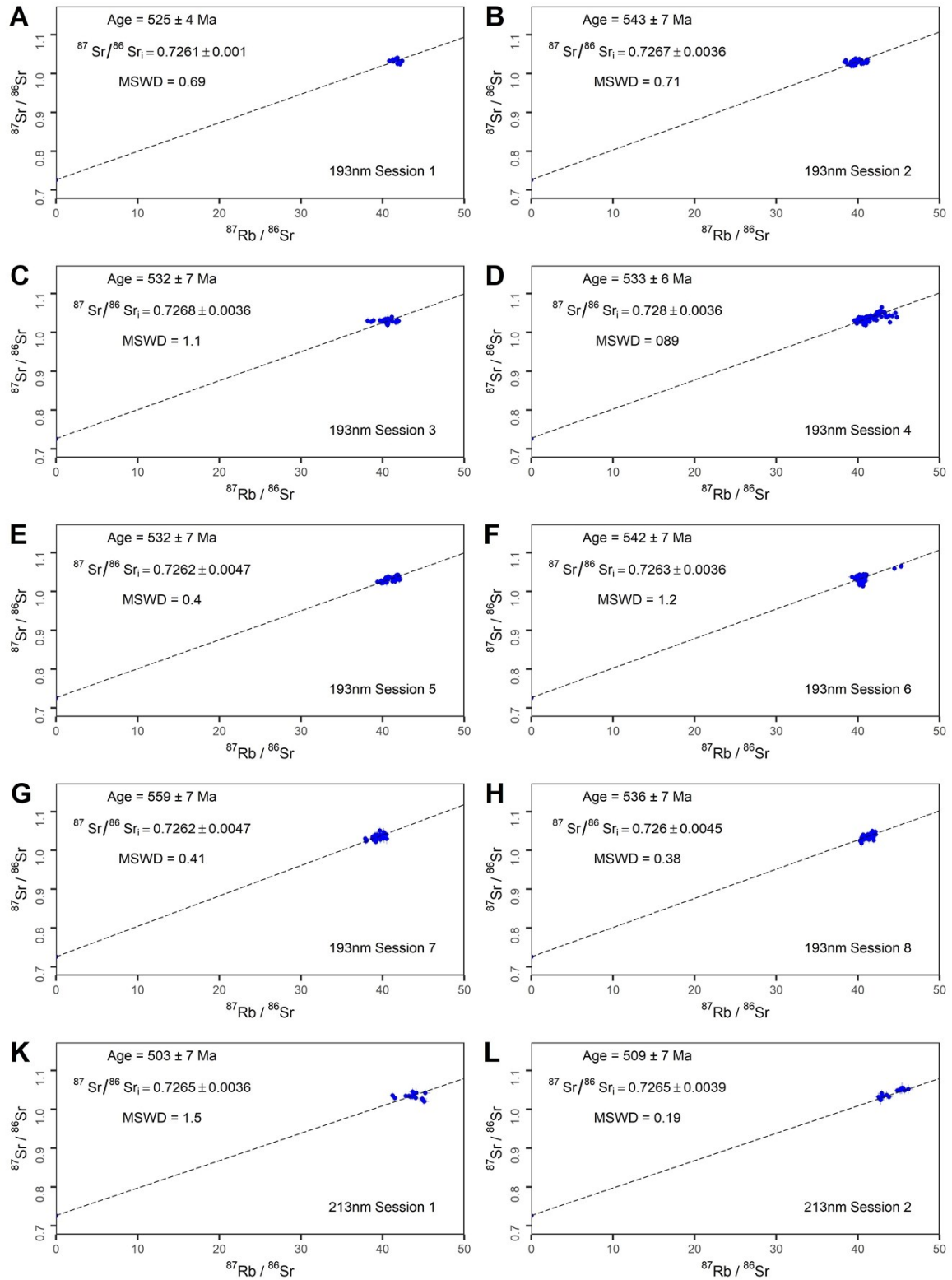
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| spot     | $^{87}\text{Rb}/^{86}\text{Sr}$ | $2\sigma$ | $^{87}\text{Sr}/^{86}\text{Sr}$ | $2\sigma$ | Session   | LA    | spot        | $^{87}\text{Rb}/^{86}\text{Sr}$ | $2\sigma$ | $^{87}\text{Sr}/^{86}\text{Sr}$ | $2\sigma$ | Session   | LA    |
|----------|---------------------------------|-----------|---------------------------------|-----------|-----------|-------|-------------|---------------------------------|-----------|---------------------------------|-----------|-----------|-------|
| MDC - 9  | 39.69                           | 0.29      | 1.028                           | 0.0086    | Session 7 | 193nm | MDC - 15    | 40.65                           | 0.27      | 1.0301                          | 0.0089    | Session 8 | 193nm |
| MDC - 10 | 39.61                           | 0.27      | 1.0379                          | 0.0072    | Session 7 | 193nm | MDC - 16    | 40.65                           | 0.28      | 1.0405                          | 0.0071    | Session 8 | 193nm |
| MDC - 11 | 40.08                           | 0.3       | 1.0323                          | 0.0091    | Session 7 | 193nm | MDC - 17    | 41.2                            | 0.32      | 1.0366                          | 0.0091    | Session 8 | 193nm |
| MDC - 12 | 40.32                           | 0.36      | 1.041                           | 0.01      | Session 7 | 193nm | MDC - 18    | 41.28                           | 0.34      | 1.0309                          | 0.0086    | Session 8 | 193nm |
| MDC - 13 | 39.09                           | 0.3       | 1.0403                          | 0.0077    | Session 7 | 193nm | MDC - 19    | 40.84                           | 0.37      | 1.0357                          | 0.0079    | Session 8 | 193nm |
| MDC - 14 | 38.96                           | 0.33      | 1.029                           | 0.01      | Session 7 | 193nm | MDC - 20    | 40.83                           | 0.43      | 1.0291                          | 0.009     | Session 8 | 193nm |
| MDC - 15 | 39.06                           | 0.24      | 1.0303                          | 0.0088    | Session 7 | 193nm | MDC - 21    | 41.1                            | 0.42      | 1.038                           | 0.009     | Session 8 | 193nm |
| MDC - 16 | 39.27                           | 0.25      | 1.0402                          | 0.008     | Session 7 | 193nm | MDC - 22    | 41.93                           | 0.4       | 1.0261                          | 0.0084    | Session 8 | 193nm |
| MDC - 17 | 39.27                           | 0.35      | 1.04                            | 0.01      | Session 7 | 193nm | MDC - 23    | 41.77                           | 0.39      | 1.0503                          | 0.0066    | Session 8 | 193nm |
| MDC - 18 | 38.77                           | 0.29      | 1.0357                          | 0.0085    | Session 7 | 193nm | MDC - 24    | 42.13                           | 0.45      | 1.0481                          | 0.0085    | Session 8 | 193nm |
| MDC - 19 | 39.24                           | 0.31      | 1.036                           | 0.0095    | Session 7 | 193nm | MDC - 25    | 41.66                           | 0.41      | 1.0413                          | 0.0087    | Session 8 | 193nm |
| MDC - 20 | 39.1                            | 0.26      | 1.0401                          | 0.0098    | Session 7 | 193nm | MDC - 26    | 41.89                           | 0.39      | 1.0326                          | 0.009     | Session 8 | 193nm |
| MDC - 21 | 39.36                           | 0.29      | 1.0392                          | 0.0095    | Session 7 | 193nm | MDC - 27    | 41.11                           | 0.39      | 1.0306                          | 0.0086    | Session 8 | 193nm |
| MDC - 28 | 40.52                           | 0.29      | 1.0355                          | 0.0079    | Session 8 | 193nm | MDC - 35    | 43.76                           | 0.51      | 1.0381                          | 0.009     | Session 1 | 213nm |
| MDC - 29 | 40.75                           | 0.41      | 1.0285                          | 0.0085    | Session 8 | 193nm | MDC - 36    | 44.07                           | 0.5       | 1.0433                          | 0.0094    | Session 1 | 213nm |
| MDC - 30 | 41.77                           | 0.43      | 1.034                           | 0.0082    | Session 8 | 193nm | MDC - 37    | 43.42                           | 0.34      | 1.0331                          | 0.0073    | Session 1 | 213nm |
| MDC - 31 | 40.27                           | 0.34      | 1.0251                          | 0.0081    | Session 8 | 193nm | MDC - 38    | 45.21                           | 0.62      | 1.0425                          | 0.008     | Session 1 | 213nm |
| MDC - 32 | 41.65                           | 0.35      | 1.0387                          | 0.0079    | Session 8 | 193nm | MDC - 39    | 45.08                           | 0.6       | 1.0208                          | 0.0086    | Session 1 | 213nm |
| MDC - 33 | 41.49                           | 0.5       | 1.0388                          | 0.0087    | Session 8 | 193nm | 5-MDS mica  | 45.38                           | 0.48      | 1.055                           | 0.015     | Session 2 | 213nm |
| MDC - 34 | 40.56                           | 0.44      | 1.0313                          | 0.0067    | Session 8 | 193nm | 6-MDS mica  | 44.81                           | 0.38      | 1.0485                          | 0.0071    | Session 2 | 213nm |
| MDC - 35 | 41.28                           | 0.36      | 1.0362                          | 0.0098    | Session 8 | 193nm | 7-MDS mica  | 45.16                           | 0.4       | 1.05                            | 0.011     | Session 2 | 213nm |
| MDC - 36 | 41.57                           | 0.42      | 1.0381                          | 0.0078    | Session 8 | 193nm | 8-MDS mica  | 45.28                           | 0.35      | 1.05                            | 0.01      | Session 2 | 213nm |
| MDC - 37 | 41.23                           | 0.35      | 1.0412                          | 0.0083    | Session 8 | 193nm | 25-MDS mica | 43.8                            | 0.47      | 1.032                           | 0.0063    | Session 2 | 213nm |
| MDC - 38 | 41.36                           | 0.42      | 1.0323                          | 0.0082    | Session 8 | 193nm | 26-MDS mica | 42.91                           | 0.49      | 1.0413                          | 0.009     | Session 2 | 213nm |
| MDC - 39 | 42.16                           | 0.33      | 1.0412                          | 0.009     | Session 8 | 193nm | 27-MDS mica | 42.77                           | 0.38      | 1.031                           | 0.017     | Session 2 | 213nm |
| MDC - 1  | 41.2                            | 0.32      | 1.0356                          | 0.0078    | Session 1 | 213nm | 28-MDS mica | 43.52                           | 0.41      | 1.037                           | 0.011     | Session 2 | 213nm |
| MDC - 13 | 41.49                           | 0.28      | 1.0294                          | 0.008     | Session 1 | 213nm | 45-MDS mica | 45.74                           | 0.48      | 1.0492                          | 0.0097    | Session 2 | 213nm |
| MDC - 14 | 44.95                           | 0.5       | 1.023                           | 0.011     | Session 1 | 213nm | 46-MDS mica | 45.51                           | 0.45      | 1.056                           | 0.014     | Session 2 | 213nm |
| MDC - 15 | 44.83                           | 0.58      | 1.0276                          | 0.0096    | Session 1 | 213nm | 47-MDS mica | 45.11                           | 0.47      | 1.0501                          | 0.009     | Session 2 | 213nm |
| MDC - 2  | 43.65                           | 0.4       | 1.0453                          | 0.0096    | Session 1 | 213nm | 48-MDS mica | 46.17                           | 0.61      | 1.052                           | 0.012     | Session 2 | 213nm |
| MDC - 25 | 43.21                           | 0.49      | 1.0344                          | 0.0076    | Session 1 | 213nm | 63-MDS mica | 42.53                           | 0.44      | 1.032                           | 0.0095    | Session 2 | 213nm |
| MDC - 26 | 42.83                           | 0.44      | 1.0347                          | 0.007     | Session 1 | 213nm | 64-MDS mica | 42.76                           | 0.44      | 1.024                           | 0.013     | Session 2 | 213nm |
| MDC - 27 | 44.02                           | 0.48      | 1.0299                          | 0.0082    | Session 1 | 213nm | 65-MDS mica | 43.12                           | 0.51      | 1.034                           | 0.011     | Session 2 | 213nm |

Table. B  $^{87}\text{Rb}/^{86}\text{Sr}$  and  $^{87}\text{Sr}/^{86}\text{Sr}$  isotopic ratios for MDC analysed by LA-ICP-MS/MS over multiple Sessions and normalised to Mica-Mg-NP reference material, using either a 193 nm or 213 nm laser ablation system (see column labelled: LA)

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| spot     | $^{87}\text{Rb}/^{86}\text{Sr}$ | $2\sigma$ | $^{87}\text{Sr}/^{86}\text{Sr}$ | $2\sigma$ | Session   | LA    | spot        | $^{87}\text{Rb}/^{86}\text{Sr}$ | $2\sigma$ | $^{87}\text{Sr}/^{86}\text{Sr}$ | $2\sigma$ | Session   | LA    |
|----------|---------------------------------|-----------|---------------------------------|-----------|-----------|-------|-------------|---------------------------------|-----------|---------------------------------|-----------|-----------|-------|
| MDC - 3  | 43.66                           | 0.47      | 1.033                           | 0.0084    | Session 1 | 213nm | 66-MDS mica | 42.76                           | 0.42      | 1.027                           | 0.012     | Session 2 | 213nm |
| MDC - 34 | 43.46                           | 0.48      | 1.0324                          | 0.0088    | Session 1 | 213nm |             |                                 |           |                                 |           |           |       |



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9 Fig. A1 The Rb/Sr isochron ages of MDC phlogopite from each individual analytical session. (A-H) the  $^{87}\text{Rb}/^{86}\text{Sr}$  and  $^{87}\text{Sr}/^{86}\text{Sr}$   
 10 ratios were obtained with the 193nm laser. (K and L) the  $^{87}\text{Rb}/^{86}\text{Sr}$  and  $^{87}\text{Sr}/^{86}\text{Sr}$  ratios were obtained with the 213nm laser.  
 11 The initial  $^{87}\text{Sr}/^{86}\text{Sr}$  ratio was fixed at 0.72607.

12 Table. C.  $^{87}\text{Rb}/^{86}\text{Sr}$  and  $^{87}\text{Sr}/^{86}\text{Sr}$  isotopic ratios for MDC analysed by and normalised to NIST 610 reference material, using either a 193 nm or 213 nm laser ablation system (see a column labelled as LA).

| spot         | $^{87}\text{Rb}/^{86}\text{Sr}$ | $2\sigma$ | $^{87}\text{Sr}/^{86}\text{Sr}$ | $2\sigma$ | LA    | spot         | $^{87}\text{Rb}/^{86}\text{Sr}$ | $2\sigma$ | $^{87}\text{Sr}/^{86}\text{Sr}$ | $2\sigma$ | LA    |
|--------------|---------------------------------|-----------|---------------------------------|-----------|-------|--------------|---------------------------------|-----------|---------------------------------|-----------|-------|
| MDCtest - 1  | 47.57                           | 0.35      | 1.0298                          | 0.0084    | 193nm | MDCtest - 1  | 50.67                           | 0.56      | 1.069                           | 0.011     | 213nm |
| MDCtest - 2  | 46.56                           | 0.35      | 1.0257                          | 0.009     | 193nm | MDCtest - 2  | 51.53                           | 0.43      | 1.071                           | 0.01      | 213nm |
| MDCtest - 3  | 47.39                           | 0.43      | 1.031                           | 0.013     | 193nm | MDCtest - 3  | 51.89                           | 0.51      | 1.068                           | 0.01      | 213nm |
| MDCtest - 4  | 46.26                           | 0.34      | 1.0202                          | 0.0091    | 193nm | MDCtest - 4  | 53.63                           | 0.84      | 1.0703                          | 0.0088    | 213nm |
| MDCtest - 5  | 46.67                           | 0.34      | 1.0256                          | 0.0091    | 193nm | MDCtest - 5  | 53.51                           | 0.81      | 1.054                           | 0.012     | 213nm |
| MDCtest - 6  | 46.58                           | 0.34      | 1.0219                          | 0.0086    | 193nm | MDCtest - 6  | 53.6                            | 1.1       | 1.066                           | 0.012     | 213nm |
| MDCtest - 7  | 46.21                           | 0.38      | 1.0313                          | 0.0091    | 193nm | MDCtest - 7  | 53.32                           | 0.79      | 1.0645                          | 0.0088    | 213nm |
| MDCtest - 8  | 46.44                           | 0.31      | 1.0189                          | 0.0092    | 193nm | MDCtest - 8  | 54                              | 1.1       | 1.066                           | 0.012     | 213nm |
| MDCtest - 9  | 47.06                           | 0.36      | 1.0179                          | 0.0095    | 193nm | MDCtest - 9  | 55.3                            | 1.3       | 1.07                            | 0.011     | 213nm |
| MDCtest - 10 | 47.46                           | 0.34      | 1.0323                          | 0.0095    | 193nm | MDCtest - 10 | 54.9                            | 1         | 1.073                           | 0.013     | 213nm |
| MDCtest - 11 | 47.33                           | 0.34      | 1.0292                          | 0.0089    | 193nm | MDCtest - 11 | 53.19                           | 0.89      | 1.0631                          | 0.0095    | 213nm |
| MDCtest - 12 | 47.61                           | 0.32      | 1.036                           | 0.011     | 193nm | MDCtest - 12 | 52.63                           | 0.84      | 1.0635                          | 0.0092    | 213nm |
| MDCtest - 13 | 47.12                           | 0.38      | 1.0275                          | 0.009     | 193nm | MDCtest - 13 | 51.38                           | 0.47      | 1.06                            | 0.01      | 213nm |
| MDCtest - 14 | 47.71                           | 0.34      | 1.0378                          | 0.0068    | 193nm | MDCtest - 14 | 51.69                           | 0.76      | 1.057                           | 0.012     | 213nm |
| MDCtest - 15 | 47.56                           | 0.35      | 1.0354                          | 0.0079    | 193nm | MDCtest - 15 | 51.85                           | 0.61      | 1.0597                          | 0.009     | 213nm |
| MDCtest - 16 | 47.43                           | 0.42      | 1.026                           | 0.012     | 193nm | MDCtest - 16 | 52.1                            | 1         | 1.058                           | 0.011     | 213nm |
| MDCtest - 17 | 48.04                           | 0.42      | 1.0222                          | 0.0091    | 193nm | MDCtest - 17 | 53.58                           | 0.91      | 1.0702                          | 0.009     | 213nm |
| MDCtest - 18 | 48.1                            | 0.45      | 1.0228                          | 0.009     | 193nm | MDCtest - 18 | 53.38                           | 0.75      | 1.0708                          | 0.0095    | 213nm |
| MDCtest - 19 | 49.09                           | 0.45      | 1.0321                          | 0.0088    | 193nm | MDCtest - 19 | 53.03                           | 0.88      | 1.072                           | 0.011     | 213nm |
| MDCtest - 20 | 49.15                           | 0.45      | 1.0352                          | 0.0078    | 193nm | MDCtest - 20 | 52.61                           | 0.83      | 1.0532                          | 0.0097    | 213nm |

14 Table D Rb-Sr isotopic ratios of NIST 610 and MDC using 'line raster' sampling approach with the 193nm laser (74 μm diameter). All data is normalised to Mica-Mg-NP reference material.

| Line number ID   | <sup>87</sup> Rb/ <sup>86</sup> Sr | 2σ     | <sup>87</sup> Sr/ <sup>86</sup> Sr | 2σ      | Line number ID | <sup>87</sup> Rb/ <sup>86</sup> Sr | 2σ   | <sup>87</sup> Sr/ <sup>86</sup> Sr | 2σ     |
|------------------|------------------------------------|--------|------------------------------------|---------|----------------|------------------------------------|------|------------------------------------|--------|
| NIST610line - 1  | 2.0688                             | 0.0041 | 0.7106                             | 0.001   | MDC line - 1   | 37.24                              | 0.14 | 1.0377                             | 0.0051 |
| NIST610line - 2  | 2.0859                             | 0.0036 | 0.71067                            | 0.00086 | MDC line - 2   | 36.68                              | 0.14 | 1.032                              | 0.005  |
| NIST610line - 3  | 2.0932                             | 0.0041 | 0.7104                             | 0.0011  | MDC line - 3   | 36.59                              | 0.17 | 1.0369                             | 0.0053 |
| NIST610line - 4  | 2.1184                             | 0.0035 | 0.71007                            | 0.00099 | MDC line - 4   | 36.75                              | 0.14 | 1.0351                             | 0.0056 |
| NIST610line - 5  | 2.1259                             | 0.0038 | 0.71147                            | 0.00097 | MDC line - 5   | 36.46                              | 0.18 | 1.0412                             | 0.0052 |
| NIST610line - 6  | 2.1161                             | 0.0033 | 0.71067                            | 0.00091 | MDC line - 6   | 36.29                              | 0.18 | 1.0326                             | 0.007  |
| NIST610line - 7  | 2.1354                             | 0.0037 | 0.7094                             | 0.001   | MDC line - 7   | 36.67                              | 0.18 | 1.0352                             | 0.005  |
| NIST610line - 8  | 2.1413                             | 0.0039 | 0.71044                            | 0.00093 | MDC line - 8   | 36.4                               | 0.14 | 1.0281                             | 0.0056 |
| NIST610line - 9  | 2.145                              | 0.0036 | 0.70936                            | 0.00089 | MDC line - 9   | 36.7                               | 0.14 | 1.0334                             | 0.0043 |
| NIST610line - 10 | 2.1464                             | 0.0036 | 0.70847                            | 0.00096 | MDC line - 10  | 36.78                              | 0.16 | 1.0407                             | 0.0055 |

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17 Table E Rb-Sr isotopic ratios of NIST 610 and MDC using 'line raster' sampling approach with the 193nm laser (74 μm diameter). All data is normalised to NIST 610 reference material.

| Line number ID  | <sup>87</sup> Rb/ <sup>86</sup> Sr | 2σ  | <sup>87</sup> Sr/ <sup>86</sup> Sr | 2σ    | Line number ID | <sup>87</sup> Rb/ <sup>86</sup> Sr | 2σ   | <sup>87</sup> Sr/ <sup>86</sup> Sr | 2σ     |
|-----------------|------------------------------------|-----|------------------------------------|-------|----------------|------------------------------------|------|------------------------------------|--------|
| MicaMgline - 1  | 167.4                              | 1.2 | 1.849                              | 0.015 | MDCl ine - 1   | 40.98                              | 0.15 | 1.0371                             | 0.0051 |
| MicaMgline - 2  | 168.3                              | 1.5 | 1.855                              | 0.014 | MDCl ine - 2   | 40.26                              | 0.19 | 1.0363                             | 0.0053 |
| MicaMgline - 3  | 168.8                              | 1.4 | 1.853                              | 0.012 | MDCl ine - 3   | 40.44                              | 0.15 | 1.0345                             | 0.0056 |
| MicaMgline - 4  | 168.6                              | 1.5 | 1.853                              | 0.016 | MDCl ine - 4   | 40.12                              | 0.2  | 1.0406                             | 0.0052 |
| MicaMgline - 5  | 169.7                              | 1.1 | 1.847                              | 0.014 | MDCl ine - 5   | 39.93                              | 0.19 | 1.032                              | 0.007  |
| MicaMgline - 6  | 171.9                              | 1.1 | 1.849                              | 0.01  | MDCl ine - 6   | 40.35                              | 0.2  | 1.0345                             | 0.005  |
| MicaMgline - 7  | 168.9                              | 1.2 | 1.852                              | 0.012 | MDCl ine - 7   | 40.05                              | 0.16 | 1.0274                             | 0.0056 |
| MicaMgline - 8  | 173.4                              | 1.3 | 1.841                              | 0.011 | MDCl ine - 8   | 40.39                              | 0.16 | 1.0327                             | 0.0043 |
| MicaMgline - 9  | 171.9                              | 1.3 | 1.855                              | 0.012 | MDCl ine - 9   | 40.47                              | 0.17 | 1.0401                             | 0.0055 |
| MicaMgline - 10 | 172.4                              | 1.2 | 1.86                               | 0.013 | MDCl ine - 10  | 40.36                              | 0.15 | 1.0313                             | 0.005  |

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19 Table F Rb-Sr ratios of NIST 610 analysed by the LA-ICP-MS/MS over multiple Sessions using the 193 nm laser systems and normalised to Mica Mg-NP reference material.

| spot         | $^{87}\text{Rb}/^{86}\text{Sr}$ | 2 $\sigma$ | $^{87}\text{Sr}/^{86}\text{Sr}$ | 2 $\sigma$ | Session   | LA    | spot         | $^{87}\text{Rb}/^{86}\text{Sr}$ | 2 $\sigma$ | $^{87}\text{Sr}/^{86}\text{Sr}$ | 2 $\sigma$ | Session   | LA    |
|--------------|---------------------------------|------------|---------------------------------|------------|-----------|-------|--------------|---------------------------------|------------|---------------------------------|------------|-----------|-------|
| NIST610 - 1  | 1.9973                          | 0.0054     | 0.7125                          | 0.0014     | Session 1 | 193nm | NIST610 - 21 | 1.9649                          | 0.0077     | 0.7095                          | 0.0017     | Session 2 | 193nm |
| NIST610 - 2  | 1.9904                          | 0.0049     | 0.7109                          | 0.0012     | Session 1 | 193nm | NIST610 - 22 | 1.9595                          | 0.0075     | 0.7089                          | 0.0017     | Session 2 | 193nm |
| NIST610 - 3  | 2.0093                          | 0.0051     | 0.7116                          | 0.0012     | Session 1 | 193nm | NIST610 - 23 | 1.9677                          | 0.0069     | 0.709                           | 0.0015     | Session 2 | 193nm |
| NIST610 - 4  | 2.0005                          | 0.0056     | 0.7113                          | 0.0013     | Session 1 | 193nm | NIST610 - 24 | 1.9621                          | 0.0078     | 0.7098                          | 0.0023     | Session 2 | 193nm |
| NIST610 - 5  | 2.0149                          | 0.0049     | 0.7112                          | 0.0013     | Session 1 | 193nm | NIST610 - 25 | 1.9681                          | 0.0078     | 0.7092                          | 0.0018     | Session 2 | 193nm |
| NIST610 - 6  | 2.0064                          | 0.0055     | 0.7126                          | 0.0013     | Session 1 | 193nm | NIST610 - 26 | 1.9641                          | 0.0076     | 0.7084                          | 0.0017     | Session 2 | 193nm |
| NIST610 - 7  | 2.0293                          | 0.0053     | 0.7106                          | 0.0013     | Session 1 | 193nm | NIST610 - 27 | 1.973                           | 0.0083     | 0.7095                          | 0.0019     | Session 2 | 193nm |
| NIST610 - 8  | 2.025                           | 0.0055     | 0.7116                          | 0.0012     | Session 1 | 193nm | NIST610 - 28 | 1.9737                          | 0.007      | 0.7091                          | 0.0016     | Session 2 | 193nm |
| NIST610 - 9  | 2.0458                          | 0.0054     | 0.7101                          | 0.0013     | Session 1 | 193nm | NIST610 - 29 | 1.9777                          | 0.008      | 0.7104                          | 0.0021     | Session 2 | 193nm |
| NIST610 - 10 | 2.0304                          | 0.0061     | 0.7113                          | 0.0013     | Session 1 | 193nm | NIST610 - 30 | 1.9786                          | 0.0073     | 0.7091                          | 0.0018     | Session 2 | 193nm |
| NIST610 - 11 | 2.069                           | 0.0061     | 0.7117                          | 0.0013     | Session 1 | 193nm | NIST610 - 31 | 1.9829                          | 0.0075     | 0.7087                          | 0.0016     | Session 2 | 193nm |
| NIST610 - 12 | 2.0529                          | 0.0058     | 0.7113                          | 0.0014     | Session 1 | 193nm | NIST610 - 32 | 1.9732                          | 0.008      | 0.7113                          | 0.0037     | Session 2 | 193nm |
| NIST610 - 1  | 1.8944                          | 0.0096     | 0.71                            | 0.0022     | Session 2 | 193nm | NIST610 - 1  | 1.8711                          | 0.007      | 0.7083                          | 0.0021     | Session 3 | 193nm |
| NIST610 - 2  | 1.9021                          | 0.0081     | 0.7085                          | 0.002      | Session 2 | 193nm | NIST610 - 2  | 1.8687                          | 0.0081     | 0.7087                          | 0.0019     | Session 3 | 193nm |
| NIST610 - 3  | 1.9218                          | 0.0084     | 0.7099                          | 0.0019     | Session 2 | 193nm | NIST610 - 3  | 1.9346                          | 0.0082     | 0.7085                          | 0.0021     | Session 3 | 193nm |
| NIST610 - 4  | 1.9198                          | 0.0078     | 0.7105                          | 0.0019     | Session 2 | 193nm | NIST610 - 4  | 1.9261                          | 0.0074     | 0.7092                          | 0.0019     | Session 3 | 193nm |
| NIST610 - 5  | 1.9322                          | 0.0085     | 0.7099                          | 0.0024     | Session 2 | 193nm | NIST610 - 5  | 1.965                           | 0.0074     | 0.7072                          | 0.0017     | Session 3 | 193nm |
| NIST610 - 6  | 1.9303                          | 0.0084     | 0.7118                          | 0.0038     | Session 2 | 193nm | NIST610 - 6  | 1.9557                          | 0.0087     | 0.7115                          | 0.0038     | Session 3 | 193nm |
| NIST610 - 7  | 1.9405                          | 0.0089     | 0.7094                          | 0.0018     | Session 2 | 193nm | NIST610 - 7  | 1.9424                          | 0.0078     | 0.707                           | 0.0018     | Session 3 | 193nm |
| NIST610 - 8  | 1.9374                          | 0.0085     | 0.7103                          | 0.0016     | Session 2 | 193nm | NIST610 - 8  | 1.9397                          | 0.0068     | 0.7088                          | 0.0019     | Session 3 | 193nm |
| NIST610 - 9  | 1.9526                          | 0.0071     | 0.7089                          | 0.0017     | Session 2 | 193nm | NIST610 - 9  | 1.9593                          | 0.0076     | 0.7078                          | 0.0018     | Session 3 | 193nm |
| NIST610 - 10 | 1.9369                          | 0.0078     | 0.7087                          | 0.0018     | Session 2 | 193nm | NIST610 - 10 | 1.9561                          | 0.0084     | 0.7082                          | 0.0018     | Session 3 | 193nm |
| NIST610 - 11 | 1.9452                          | 0.0083     | 0.7094                          | 0.0016     | Session 2 | 193nm | NIST610 - 11 | 1.9951                          | 0.0083     | 0.7071                          | 0.0019     | Session 3 | 193nm |
| NIST610 - 12 | 1.9462                          | 0.0077     | 0.7096                          | 0.0018     | Session 2 | 193nm | NIST610 - 12 | 1.9844                          | 0.0083     | 0.7085                          | 0.002      | Session 3 | 193nm |
| NIST610 - 13 | 1.9558                          | 0.0079     | 0.7088                          | 0.0018     | Session 2 | 193nm | NIST610 - 13 | 1.9879                          | 0.0087     | 0.7083                          | 0.0019     | Session 3 | 193nm |
| NIST610 - 14 | 1.9487                          | 0.0079     | 0.712                           | 0.003      | Session 2 | 193nm | NIST610 - 14 | 1.9859                          | 0.0079     | 0.7083                          | 0.0019     | Session 3 | 193nm |

Table F Rb-Sr isotopic ratios of NIST 610 analysed by the LA ICP-MS/MS over multiple Sessions using 139nm laser systems and normalised with Mica Mg-NP reference material, Continued.

| spot         | $^{87}\text{Rb}/^{86}\text{Sr}$ | 2 $\sigma$ | $^{87}\text{Sr}/^{86}\text{Sr}$ | 2 $\sigma$ | Session   | LA    | spot         | $^{87}\text{Rb}/^{86}\text{Sr}$ | 2 $\sigma$ | $^{87}\text{Sr}/^{86}\text{Sr}$ | 2 $\sigma$ | Session   | LA    |
|--------------|---------------------------------|------------|---------------------------------|------------|-----------|-------|--------------|---------------------------------|------------|---------------------------------|------------|-----------|-------|
| NIST610 - 15 | 1.9607                          | 0.0075     | 0.7085                          | 0.0018     | Session 2 | 193nm | NIST610 - 15 | 1.9591                          | 0.0088     | 0.7082                          | 0.002      | Session 3 | 193nm |
| NIST610 - 16 | 1.9503                          | 0.0081     | 0.7086                          | 0.0018     | Session 2 | 193nm | NIST610 - 16 | 1.9647                          | 0.0082     | 0.7089                          | 0.0019     | Session 3 | 193nm |
| NIST610 - 17 | 1.964                           | 0.0077     | 0.7082                          | 0.0015     | Session 2 | 193nm | NIST610 - 17 | 1.9687                          | 0.0074     | 0.7104                          | 0.002      | Session 3 | 193nm |
| NIST610 - 18 | 1.959                           | 0.0071     | 0.7091                          | 0.0015     | Session 2 | 193nm | NIST610 - 18 | 1.9589                          | 0.0074     | 0.7078                          | 0.0019     | Session 3 | 193nm |
| NIST610 - 19 | 1.9601                          | 0.0074     | 0.7099                          | 0.0022     | Session 2 | 193nm | NIST610 - 1  | 1.9795                          | 0.0061     | 0.7113                          | 0.0014     | Session 4 | 193nm |
| NIST610 - 20 | 1.9552                          | 0.0078     | 0.7095                          | 0.002      | Session 2 | 193nm | NIST610 - 2  | 1.9773                          | 0.0057     | 0.7115                          | 0.0012     | Session 4 | 193nm |
| NIST610 - 3  | 1.991                           | 0.006      | 0.7106                          | 0.0013     | Session 4 | 193nm | NIST610 - 2  | 2.0247                          | 0.0074     | 0.7085                          | 0.0018     | Session 5 | 193nm |
| NIST610 - 4  | 1.9884                          | 0.0058     | 0.7112                          | 0.0013     | Session 4 | 193nm | NIST610 - 3  | 2.0453                          | 0.0076     | 0.7096                          | 0.0019     | Session 5 | 193nm |
| NIST610 - 5  | 1.9973                          | 0.0059     | 0.7119                          | 0.0012     | Session 4 | 193nm | NIST610 - 4  | 2.0304                          | 0.0075     | 0.7095                          | 0.0016     | Session 5 | 193nm |
| NIST610 - 6  | 1.9949                          | 0.0061     | 0.7111                          | 0.0015     | Session 4 | 193nm | NIST610 - 5  | 2.0385                          | 0.0076     | 0.7093                          | 0.0018     | Session 5 | 193nm |
| NIST610 - 7  | 2.0003                          | 0.006      | 0.7106                          | 0.0014     | Session 4 | 193nm | NIST610 - 6  | 2.0381                          | 0.0074     | 0.7105                          | 0.0016     | Session 5 | 193nm |
| NIST610 - 8  | 1.9946                          | 0.0067     | 0.7116                          | 0.0013     | Session 4 | 193nm | NIST610 - 7  | 2.0454                          | 0.0075     | 0.7101                          | 0.0018     | Session 5 | 193nm |
| NIST610 - 9  | 1.997                           | 0.0062     | 0.7114                          | 0.0015     | Session 4 | 193nm | NIST610 - 8  | 2.0363                          | 0.0072     | 0.7115                          | 0.0016     | Session 5 | 193nm |
| NIST610 - 10 | 1.9902                          | 0.0064     | 0.7116                          | 0.0013     | Session 4 | 193nm | NIST610 - 9  | 2.0502                          | 0.0075     | 0.7099                          | 0.0017     | Session 5 | 193nm |
| NIST610 - 11 | 1.9973                          | 0.0065     | 0.7108                          | 0.0014     | Session 4 | 193nm | NIST610 - 10 | 2.0475                          | 0.0068     | 0.7103                          | 0.0016     | Session 5 | 193nm |
| NIST610 - 12 | 1.9951                          | 0.0067     | 0.7117                          | 0.0015     | Session 4 | 193nm | NIST610 - 11 | 2.0482                          | 0.0073     | 0.7087                          | 0.0018     | Session 5 | 193nm |
| NIST610 - 13 | 1.9957                          | 0.0071     | 0.7114                          | 0.0014     | Session 4 | 193nm | NIST610 - 12 | 2.0451                          | 0.0081     | 0.7099                          | 0.0014     | Session 5 | 193nm |
| NIST610 - 14 | 1.9961                          | 0.0059     | 0.71                            | 0.0013     | Session 4 | 193nm | NIST610 - 13 | 2.0426                          | 0.0066     | 0.7097                          | 0.0017     | Session 5 | 193nm |
| NIST610 - 15 | 1.9968                          | 0.0062     | 0.7107                          | 0.0015     | Session 4 | 193nm | NIST610 - 14 | 2.0381                          | 0.0073     | 0.7111                          | 0.0015     | Session 5 | 193nm |
| NIST610 - 16 | 2.0011                          | 0.0062     | 0.7106                          | 0.0013     | Session 4 | 193nm | NIST610 - 15 | 2.0449                          | 0.0071     | 0.7097                          | 0.0017     | Session 5 | 193nm |
| NIST610 - 17 | 1.9924                          | 0.0059     | 0.7115                          | 0.0013     | Session 4 | 193nm | NIST610 - 16 | 2.0385                          | 0.0069     | 0.7094                          | 0.0017     | Session 5 | 193nm |
| NIST610 - 18 | 1.9896                          | 0.0063     | 0.7102                          | 0.0014     | Session 4 | 193nm | NIST610 - 17 | 2.0418                          | 0.0078     | 0.7085                          | 0.0018     | Session 5 | 193nm |
| NIST610 - 19 | 1.9957                          | 0.0059     | 0.7115                          | 0.0012     | Session 4 | 193nm | NIST610 - 18 | 2.0432                          | 0.008      | 0.7105                          | 0.0018     | Session 5 | 193nm |
| NIST610 - 20 | 1.9918                          | 0.0058     | 0.7108                          | 0.0014     | Session 4 | 193nm | NIST610 - 19 | 2.0327                          | 0.0075     | 0.7102                          | 0.0015     | Session 5 | 193nm |
| NIST610 - 21 | 1.996                           | 0.0056     | 0.711                           | 0.0013     | Session 4 | 193nm | NIST610 - 20 | 2.0324                          | 0.0068     | 0.71                            | 0.002      | Session 5 | 193nm |
| NIST610 - 22 | 1.9854                          | 0.0067     | 0.7095                          | 0.0013     | Session 4 | 193nm | NIST610 - 21 | 2.0323                          | 0.0079     | 0.7106                          | 0.0017     | Session 5 | 193nm |
| NIST610 - 23 | 1.9897                          | 0.0066     | 0.7096                          | 0.0013     | Session 4 | 193nm | NIST610 - 22 | 2.0374                          | 0.007      | 0.7106                          | 0.0017     | Session 5 | 193nm |

Table F Rb-Sr isotopic ratios of NIST 610 analysed by the LA ICP-MS/MS over multiple Sessions using 139nm laser systems and normalised with Mica Mg-NP reference material, Continued.

| spot         | $^{87}\text{Rb}/^{86}\text{Sr}$ | 2 $\sigma$ | $^{87}\text{Sr}/^{86}\text{Sr}$ | 2 $\sigma$ | Session   | LA    | spot         | $^{87}\text{Rb}/^{86}\text{Sr}$ | 2 $\sigma$ | $^{87}\text{Sr}/^{86}\text{Sr}$ | 2 $\sigma$ | Session   | LA    |
|--------------|---------------------------------|------------|---------------------------------|------------|-----------|-------|--------------|---------------------------------|------------|---------------------------------|------------|-----------|-------|
| NIST610 - 24 | 1.9796                          | 0.0066     | 0.7111                          | 0.0012     | Session 4 | 193nm | NIST610 - 23 | 2.0324                          | 0.0077     | 0.7097                          | 0.0018     | Session 5 | 193nm |
| NIST610 - 25 | 1.9921                          | 0.0062     | 0.7114                          | 0.0013     | Session 4 | 193nm | NIST610 - 24 | 2.0281                          | 0.0081     | 0.7107                          | 0.0018     | Session 5 | 193nm |
| NIST610 - 26 | 1.9843                          | 0.0061     | 0.7103                          | 0.0012     | Session 4 | 193nm | NIST610 - 25 | 1.9938                          | 0.0074     | 0.7095                          | 0.0018     | Session 6 | 193nm |
| NIST610 - 27 | 1.9867                          | 0.0063     | 0.7097                          | 0.0013     | Session 4 | 193nm | NIST610 - 1  | 1.9742                          | 0.0063     | 0.7101                          | 0.0015     | Session 6 | 193nm |
| NIST610 - 28 | 1.9859                          | 0.0067     | 0.7107                          | 0.0012     | Session 4 | 193nm | NIST610 - 2  | 2.03                            | 0.0062     | 0.7109                          | 0.0018     | Session 6 | 193nm |
| NIST610 - 29 | 1.9905                          | 0.0065     | 0.7112                          | 0.0014     | Session 4 | 193nm | NIST610 - 3  | 1.9942                          | 0.0068     | 0.7112                          | 0.0015     | Session 6 | 193nm |
| NIST610 - 30 | 1.9794                          | 0.0062     | 0.711                           | 0.0013     | Session 4 | 193nm | NIST610 - 4  | 2.0079                          | 0.0058     | 0.7089                          | 0.0012     | Session 6 | 193nm |
| NIST610 - 31 | 1.9835                          | 0.0066     | 0.7099                          | 0.0014     | Session 4 | 193nm | NIST610 - 5  | 2.0167                          | 0.0067     | 0.7092                          | 0.0017     | Session 6 | 193nm |
| NIST610 - 32 | 1.9706                          | 0.0066     | 0.7106                          | 0.0014     | Session 4 | 193nm | NIST610 - 6  | 2.0136                          | 0.006      | 0.7086                          | 0.0016     | Session 6 | 193nm |
| NIST610 - 33 | 1.983                           | 0.0068     | 0.71                            | 0.0015     | Session 4 | 193nm | NIST610 - 7  | 1.9985                          | 0.0056     | 0.7102                          | 0.0015     | Session 6 | 193nm |
| NIST610 - 34 | 1.9818                          | 0.0063     | 0.7109                          | 0.0014     | Session 4 | 193nm | NIST610 - 8  | 2.0049                          | 0.0061     | 0.709                           | 0.0013     | Session 6 | 193nm |
| NIST610 - 1  | 2.0342                          | 0.008      | 0.7107                          | 0.0016     | Session 5 | 193nm | NIST610 - 9  | 2.0049                          | 0.0066     | 0.71                            | 0.0013     | Session 6 | 193nm |
| NIST610 - 10 | 2.0107                          | 0.0058     | 0.7087                          | 0.0014     | Session 6 | 193nm | NIST610 - 3  | 1.948                           | 0.0055     | 0.7099                          | 0.0019     | Session 7 | 193nm |
| NIST610 - 11 | 2.0148                          | 0.0066     | 0.7117                          | 0.0014     | Session 6 | 193nm | NIST610 - 4  | 1.9547                          | 0.0055     | 0.7082                          | 0.0017     | Session 7 | 193nm |
| NIST610 - 12 | 2.0112                          | 0.0073     | 0.7105                          | 0.0013     | Session 6 | 193nm | NIST610 - 5  | 1.9502                          | 0.0055     | 0.7092                          | 0.0017     | Session 7 | 193nm |
| NIST610 - 13 | 2.016                           | 0.0064     | 0.7101                          | 0.0012     | Session 6 | 193nm | NIST610 - 6  | 1.9429                          | 0.0071     | 0.7077                          | 0.002      | Session 7 | 193nm |
| NIST610 - 14 | 2.0016                          | 0.0059     | 0.7105                          | 0.0012     | Session 6 | 193nm | NIST610 - 7  | 1.9409                          | 0.0043     | 0.7104                          | 0.0019     | Session 7 | 193nm |
| NIST610 - 15 | 2.0066                          | 0.0063     | 0.7107                          | 0.0013     | Session 6 | 193nm | NIST610 - 8  | 1.9475                          | 0.0058     | 0.7094                          | 0.0019     | Session 7 | 193nm |
| NIST610 - 16 | 2.0032                          | 0.0064     | 0.7093                          | 0.0014     | Session 6 | 193nm | NIST610 - 9  | 1.9455                          | 0.0078     | 0.7083                          | 0.0016     | Session 7 | 193nm |
| NIST610 - 17 | 2.017                           | 0.0065     | 0.7112                          | 0.0014     | Session 6 | 193nm | NIST610 - 10 | 1.9384                          | 0.0065     | 0.7085                          | 0.0016     | Session 7 | 193nm |
| NIST610 - 18 | 2.0144                          | 0.0064     | 0.7101                          | 0.0015     | Session 6 | 193nm | NIST610 - 11 | 1.9533                          | 0.0061     | 0.7097                          | 0.0021     | Session 7 | 193nm |
| NIST610 - 19 | 2.0081                          | 0.0066     | 0.7111                          | 0.0015     | Session 6 | 193nm | NIST610 - 12 | 1.9436                          | 0.0065     | 0.7097                          | 0.0023     | Session 7 | 193nm |
| NIST610 - 20 | 2.0146                          | 0.0073     | 0.7118                          | 0.0013     | Session 6 | 193nm | NIST610 - 13 | 1.9329                          | 0.0051     | 0.7089                          | 0.0015     | Session 7 | 193nm |
| NIST610 - 21 | 2.0159                          | 0.0073     | 0.7102                          | 0.0014     | Session 6 | 193nm | NIST610 - 14 | 1.934                           | 0.0055     | 0.7097                          | 0.0021     | Session 7 | 193nm |
| NIST610 - 22 | 2.0093                          | 0.0071     | 0.7104                          | 0.0014     | Session 6 | 193nm | NIST610 - 15 | 1.9402                          | 0.006      | 0.7087                          | 0.002      | Session 7 | 193nm |
| NIST610 - 23 | 2.0145                          | 0.0057     | 0.7098                          | 0.0014     | Session 6 | 193nm | NIST610 - 16 | 1.9212                          | 0.0058     | 0.71                            | 0.002      | Session 7 | 193nm |
| NIST610 - 24 | 2.005                           | 0.0066     | 0.7086                          | 0.0015     | Session 6 | 193nm | NIST610 - 17 | 1.9356                          | 0.0074     | 0.7087                          | 0.0018     | Session 7 | 193nm |

Table F Rb-Sr isotopic ratios of NIST 610 analysed by the LA ICP-MS/MS over multiple Sessions using 139nm laser systems and normalised with Mica Mg-NP reference material, Continued.

| spot         | $^{87}\text{Rb}/^{86}\text{Sr}$ | $2\sigma$ | $^{87}\text{Sr}/^{86}\text{Sr}$ | $2\sigma$ | Session   | LA    | spot         | $^{87}\text{Rb}/^{86}\text{Sr}$ | $2\sigma$ | $^{87}\text{Sr}/^{86}\text{Sr}$ | $2\sigma$ | Session   | LA    |
|--------------|---------------------------------|-----------|---------------------------------|-----------|-----------|-------|--------------|---------------------------------|-----------|---------------------------------|-----------|-----------|-------|
| NIST610 - 25 | 2.0083                          | 0.0068    | 0.7109                          | 0.0013    | Session 6 | 193nm | NIST610 - 18 | 1.9445                          | 0.0063    | 0.7095                          | 0.002     | Session 7 | 193nm |
| NIST610 - 26 | 1.9999                          | 0.0066    | 0.7109                          | 0.0014    | Session 6 | 193nm | NIST610 - 19 | 1.9262                          | 0.0063    | 0.7099                          | 0.0013    | Session 7 | 193nm |
| NIST610 - 27 | 2.0088                          | 0.0061    | 0.7115                          | 0.0014    | Session 6 | 193nm | NIST610 - 20 | 1.9297                          | 0.006     | 0.7076                          | 0.0015    | Session 7 | 193nm |
| NIST610 - 28 | 2.0058                          | 0.006     | 0.7095                          | 0.0013    | Session 6 | 193nm | NIST610 - 21 | 1.9359                          | 0.0049    | 0.7091                          | 0.0016    | Session 7 | 193nm |
| NIST610 - 29 | 2.0107                          | 0.0064    | 0.7096                          | 0.0013    | Session 6 | 193nm | NIST610 - 22 | 1.9507                          | 0.0073    | 0.707                           | 0.0021    | Session 7 | 193nm |
| NIST610 - 30 | 2.0092                          | 0.0061    | 0.7118                          | 0.0014    | Session 6 | 193nm | NIST610 - 23 | 1.9368                          | 0.0062    | 0.7092                          | 0.0017    | Session 7 | 193nm |
| NIST610 - 31 | 2.0071                          | 0.0067    | 0.7126                          | 0.0014    | Session 6 | 193nm | NIST610 - 24 | 1.9367                          | 0.0063    | 0.7098                          | 0.0017    | Session 7 | 193nm |
| NIST610 - 32 | 2.0024                          | 0.0071    | 0.7119                          | 0.0013    | Session 6 | 193nm | NIST610 - 25 | 1.9459                          | 0.0056    | 0.711                           | 0.0015    | Session 7 | 193nm |
| NIST610 - 33 | 2.0045                          | 0.0065    | 0.7109                          | 0.0014    | Session 6 | 193nm | NIST610 - 26 | 1.9432                          | 0.0054    | 0.709                           | 0.0019    | Session 7 | 193nm |
| NIST610 - 34 | 2.0001                          | 0.0057    | 0.7109                          | 0.0013    | Session 6 | 193nm | NIST610 - 1  | 1.9786                          | 0.0072    | 0.7102                          | 0.0022    | Session 8 | 193nm |
| NIST610 - 35 | 2.0054                          | 0.0061    | 0.7104                          | 0.0014    | Session 6 | 193nm | NIST610 - 2  | 1.9866                          | 0.0049    | 0.7087                          | 0.002     | Session 8 | 193nm |
| NIST610 - 36 | 2.0001                          | 0.0064    | 0.7091                          | 0.0014    | Session 6 | 193nm | NIST610 - 3  | 2.0099                          | 0.0076    | 0.7109                          | 0.0027    | Session 8 | 193nm |
| NIST610 - 37 | 2.0011                          | 0.0059    | 0.7118                          | 0.0013    | Session 6 | 193nm | NIST610 - 4  | 2.0085                          | 0.007     | 0.7101                          | 0.0016    | Session 8 | 193nm |
| NIST610 - 38 | 1.9988                          | 0.0071    | 0.7104                          | 0.0013    | Session 6 | 193nm | NIST610 - 5  | 2.0018                          | 0.0064    | 0.7083                          | 0.002     | Session 8 | 193nm |
| NIST610 - 39 | 1.9904                          | 0.0067    | 0.7093                          | 0.0013    | Session 6 | 193nm | NIST610 - 6  | 2.0018                          | 0.0058    | 0.7108                          | 0.0019    | Session 8 | 193nm |
| NIST610 - 40 | 1.9909                          | 0.0074    | 0.7097                          | 0.0012    | Session 6 | 193nm | NIST610 - 7  | 2.0126                          | 0.0078    | 0.7103                          | 0.002     | Session 8 | 193nm |
| NIST610 - 1  | 1.9465                          | 0.0066    | 0.7096                          | 0.002     | Session 7 | 193nm | NIST610 - 8  | 2.0201                          | 0.0071    | 0.7102                          | 0.0021    | Session 8 | 193nm |
| NIST610 - 2  | 1.945                           | 0.0059    | 0.71                            | 0.0021    | Session 7 | 193nm | NIST610 - 9  | 2.0142                          | 0.0061    | 0.7106                          | 0.0016    | Session 8 | 193nm |
| NIST610 - 10 | 2.0224                          | 0.0065    | 0.7094                          | 0.0021    | Session 8 | 193nm | NIST610 - 19 | 1.9985                          | 0.0062    | 0.7105                          | 0.0016    | Session 8 | 193nm |
| NIST610 - 11 | 2.0051                          | 0.0071    | 0.7071                          | 0.0025    | Session 8 | 193nm | NIST610 - 20 | 2.0036                          | 0.0066    | 0.7102                          | 0.0018    | Session 8 | 193nm |
| NIST610 - 12 | 2.0153                          | 0.0077    | 0.7122                          | 0.002     | Session 8 | 193nm | NIST610 - 21 | 2.007                           | 0.0062    | 0.7088                          | 0.0014    | Session 8 | 193nm |
| NIST610 - 13 | 2.003                           | 0.0069    | 0.7089                          | 0.0018    | Session 8 | 193nm | NIST610 - 22 | 2.0076                          | 0.0082    | 0.7103                          | 0.0019    | Session 8 | 193nm |
| NIST610 - 14 | 2.0097                          | 0.0063    | 0.7134                          | 0.0018    | Session 8 | 193nm | NIST610 - 23 | 2.0016                          | 0.0062    | 0.71                            | 0.0019    | Session 8 | 193nm |
| NIST610 - 15 | 2.0163                          | 0.0067    | 0.711                           | 0.002     | Session 8 | 193nm | NIST610 - 24 | 2.0066                          | 0.0064    | 0.711                           | 0.0019    | Session 8 | 193nm |
| NIST610 - 16 | 2.0033                          | 0.0057    | 0.7101                          | 0.0018    | Session 8 | 193nm | NIST610 - 25 | 2.0104                          | 0.0071    | 0.7102                          | 0.0023    | Session 8 | 193nm |
| NIST610 - 17 | 2.0035                          | 0.0078    | 0.7093                          | 0.0019    | Session 8 | 193nm | NIST610 - 26 | 2.0082                          | 0.0073    | 0.7091                          | 0.0021    | Session 8 | 193nm |
| NIST610 - 18 | 2.0134                          | 0.0078    | 0.7107                          | 0.002     | Session 8 | 193nm |              |                                 |           |                                 |           |           |       |

