Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A

Supplementary Information

Investigation of the high-temperature redox chemistry of $Sr_2Fe_{1.5}Mo_{0.5}O_{6-\delta}$ via *in situ* neutron diffraction

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Figure S1 Powder neutron diffraction profiles for $Sr_2Fe_{1.5}Mo_{0.5}O_{6-\delta}$ in O_2 in the temperature range 500-850°C.

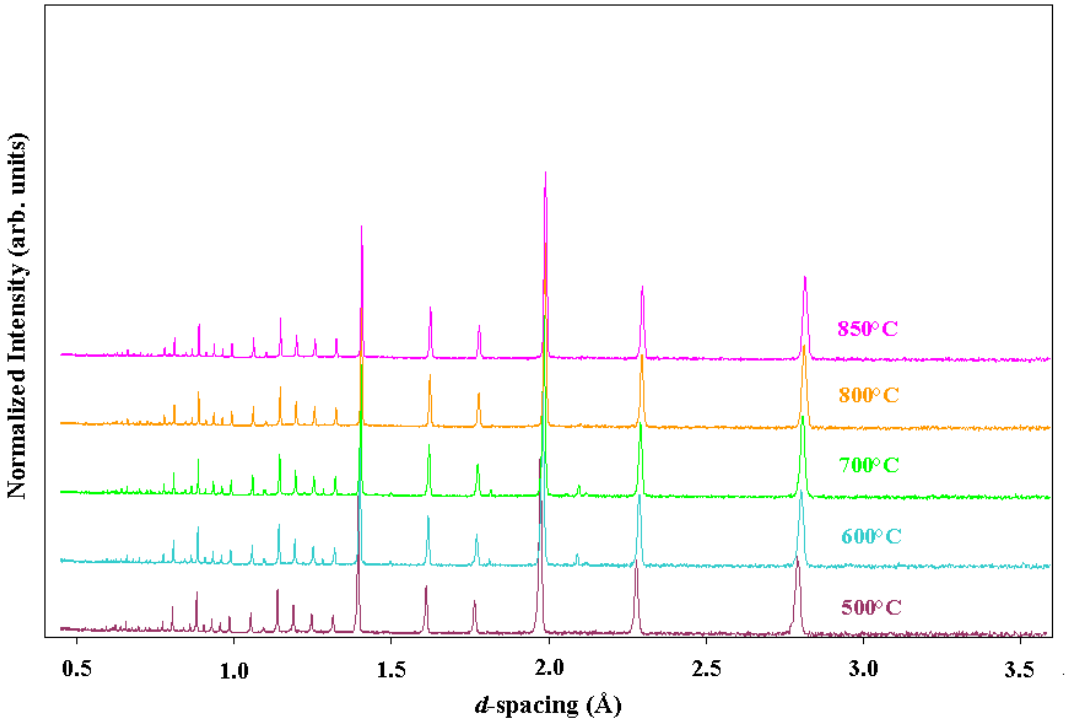

Figure S2 Observed (black crosses), calculated (red line), and difference (blue line) powder neutron diffraction profile for $Sr_2Fe_{1.5}Mo_{0.5}O_{6-\delta}$ in O_2 at 850°C, refined in the cubic space group *Pm*-3*m*. The vertical markers correspond to the allowed Bragg reflections.

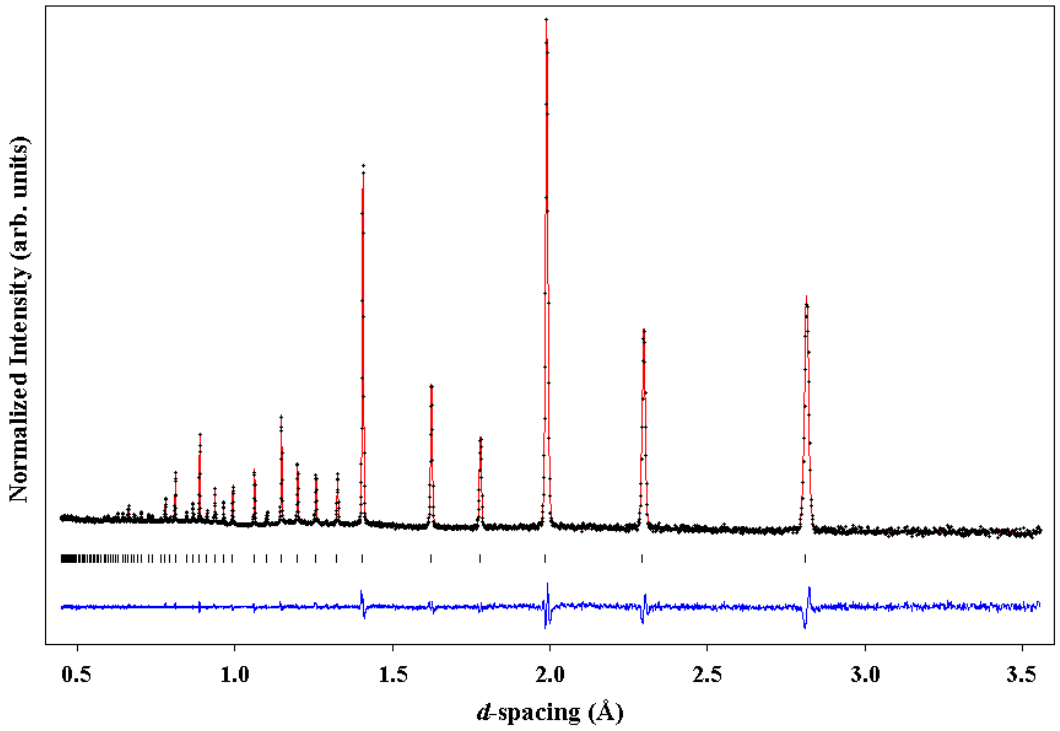

Figure S3 Observed (black crosses), calculated (red line), and difference (blue line) powder neutron diffraction profile for $Sr_2Fe_{1.5}Mo_{0.5}O_{6-\delta}$ at 25°C after having been cooled in O_2, refined in the tetragonal space group *I*4/*mcm*. The vertical markers correspond to the allowed Bragg reflections.