

Supplementary table S1. Pb isotopic data

Sample (a)	Compositional Parameters						Isotopic Ages										Linear expansion = 2		F(2020/33)		Ion Yield		
	Wt. mg	Pb µm	Pb ppm	<sup>206</sup> Pb x10 <sup>-11</sup> mol (e)	mol % (e)	0	<sup>206</sup> Pb (e)	<sup>207</sup> Pb (pp)	<sup>208</sup> Pb (pp)	U (pp)	<sup>206</sup> Pb (pp)	<sup>207</sup> Pb (pp)	<sup>208</sup> Pb (pp)	$\alpha$ (%)	$\sigma$ (%)	Sample (Radiogenic + Initial Pb) Isotopic Ratios	corr. coef	F(2020/33)	1 SE	Pb (%)	U (%)		
	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)	(s)	(t)	(u)	(v)		
L2025-08 B01 SRM81+D03	6.000	0.0099	0.1196	-0.8858	-10.59%	0	758	718	59	16.909	36.637	2.16872			0.914647	0.0032	0.059140	0.0178	-0.4967	1.0006	0.0052	7.45	0.01
L2025-08 B02 SRM81+D03	6.000	0.0099	0.1197	-0.8828	-10.59%	0	758	718	59	16.915	36.655	2.16703			0.914668	0.0039	0.059120	0.0173	-0.2013	1.0006	0.0050	8.15	0.01
L2025-08 B04 SRM81+D03	6.000	0.0099	0.1197	-0.8830	-10.55%	0	758	718	59	16.915	36.651	2.16684			0.914669	0.0028	0.059121	0.0151	-0.1116	1.0006	0.0068	14.89	0.01
L2025-16 B01 SRM 81 +D03 Merck	2.000	0.0247	0.0895	-0.2172	-10.41%	0	189	179	49	16.507	36.703	2.16704			0.914665	0.0065	0.059043	0.0281	0.0484	1.0006	0.0043	8.49	0.02
L2025-16 B02 SRM 81 +D03 Merck	2.000	0.0247	0.0895	-0.2173	-10.41%	0	189	179	49	16.506	36.691	2.16711			0.914761	0.0111	0.059046	0.0469	-0.1628	1.0006	0.0063	3.06	0.02
L2025-16 B04 SRM 81 +D03 Merck	2.000	0.0247	0.0895	-0.2180	-10.45%	0	189	179	49	16.531	36.691	2.16709			0.914720	0.0065	0.059033	0.0229	-0.0650	1.0006	0.0046	7.94	0.02
L2025-16 B05 SRM 81 +D03 Merck	2.000	0.0247	0.0895	-0.2177	-10.43%	0	189	179	49	16.533	36.691	2.16695			0.914642	0.0112	0.059042	0.0186	0.0125	1.0006	0.0044	8.66	0.02
L2025-37 B11 SRM81 + D03	5.000	0.0099	0.0351	-0.2132	-10.44%	0	185	175	49	16.832	36.695	2.16728			0.914787	0.0085	0.059061	0.0380	-0.0588	1.0007	0.0094	6.96	0.02
L2025-42 B19 SRM81+D03	5.000	0.0099	0.0355	-0.2159	-10.44%	0	187	178	49	16.824	36.700	2.16724			0.914697	0.0070	0.059054	0.0230	-0.0189	1.0006	0.0060	8.59	0.02
L2025-46 B12 SRM81+D03	5.000	0.0099	0.0355	-0.2170	-10.46%	0	188	178	49	16.826	36.689	2.16648			0.914531	0.0070	0.059033	0.0226	-0.1059	1.0004	0.0063	10.77	0.02
L2025-25 B03 SRM81+D03 3-step	7.000	0.0098	0.0351	-0.2093	-10.47%	0	259	245	69	16.528	36.697	2.16790			0.914721	0.0196	0.059076	0.1024	-0.2587	1.0006	0.0077	0.73	0.01
L2025-25 B03 SRM81+D03 Day	7.000	0.0098	0.0351	-0.2041	-10.28%	0	259	246	69	16.506	36.771	2.16861			0.914929	0.0233	0.059076	0.0307	-0.4844	1.0020	0.0103	0.85	0.01
Average										16.5267	36.681	2.16707			0.914683	11	0.059079						
SD										0.0192	0.048	0.00075			0.000137		0.000067						
SD%										0.1136	0.1307	0.0344			0.0150		0.1135						
L2025-08 B05 SRM82+D03	6.000	0.0099	0.0627	3.5776	49.08%	0	304	376	59	36.721	36.724	1.000096			0.467080	0.0050	0.027233	0.0238	0.0788	1.0006	0.0069	7.65	0.01
L2025-08 B06 SRM82+D03	6.000	0.0099	0.0627	3.5762	49.06%	0	304	376	59	36.710	36.710	1.000103			0.467071	0.0039	0.027241	0.0187	0.1158	1.0006	0.0047	10.77	0.01
L2025-08 B07 SRM82+D03	6.000	0.0099	0.0627	3.5774	49.07%	0	304	376	59	36.719	36.723	1.000126			0.467076	0.0043	0.027234	0.0231	0.0561	1.0007	0.0036	8.44	0.01
L2025-08 B08 SRM82+D03	6.000	0.0099	0.0627	3.5758	49.06%	0	304	376	59	36.708	36.705	0.999985			0.467043	0.0039	0.027243	0.0177	-0.0592	1.0006	0.0063	10.59	0.01
L2025-13 B13 SRM82+D03 Aldrich	5.000	0.0099	0.1039	4.9343	49.04%	0	420	519	49	36.694	36.688	0.999827			0.466988	0.0038	0.027252	0.0176	-0.1346	1.0007	0.0130	10.40	0.02
L2025-13 B14 SRM82+D03 Aldrich	5.000	0.0099	0.1039	4.9356	49.06%	0	420	519	49	36.711	36.702	0.999768			0.466985	0.0032	0.027240	0.0166	-0.1020	1.0009	0.0115	15.99	0.02
L2025-13 B15 SRM82+D03 Aldrich	5.000	0.0099	0.1039	4.9347	49.05%	0	420	519	49	36.698	36.690	0.999782			0.466995	0.0027	0.027249	0.0143	-0.1054	1.0009	0.0152	14.16	0.02
L2025-13 B16 SRM82+D03 Aldrich	5.000	0.0099	0.1039	4.9356	49.05%	0	420	519	49	36.700	36.691	0.999771			0.467007	0.0028	0.027248	0.0237	-0.1312	1.0009	0.0099	12.54	0.02
L2025-16 B03 SRM 82+D03 Merck	2.000	0.0247	0.1231	2.3408	49.09%	0	199	246	49	36.722	36.718	0.999992			0.467030	0.0043	0.027231	0.0202	0.0762	1.0007	0.0037	11.42	0.02
L2025-16 B05 SRM 82+D03 Merck	2.000	0.0247	0.1231	2.3397	49.06%	0	199	246	49	36.709	36.704	0.999869			0.467035	0.0062	0.027241	0.0224	-0.0975	1.0006	0.0068	9.56	0.02
L2025-16 B06 SRM 82+D03 Merck	2.000	0.0247	0.1231	2.3404	49.07%	0	199	246	49	36.716	36.716	1.000020			0.467061	0.0055	0.027236	0.0222	0.0770	1.0006	0.0042	8.53	0.02
L2025-16 B08 SRM 82+D03 Merck	2.000	0.0247	0.1231	2.3403	49.07%	0	199	246	49	36.715	36.712	0.999941			0.467030	0.0066	0.027237	0.0213	-0.1919	1.0006	0.0043	8.45	0.02
L2025-36 B07 Spike calb 07 D03-RPG	9.740	1.9503	0.3849	36.588	49.09%	0	3109	3847	18996	36.733	36.728	0.999948			0.466995	0.0034	0.027223	0.0072	0.3203	1.0013	0.0019	2.31	0.06
L2025-36 B08 Spike calb 08 D03-RPG	9.920	1.9911	0.4032	36.433	49.10%	0	3096	3830	18916	36.735	36.731	0.999983			0.466985	0.0027	0.027223	0.0065	0.4067	1.0006	0.0027	3.80	0.21
L2025-36 B10 Spike calb 10 D03-RPG	19.740	1.8697	0.3780	70.974	49.10%	0	6031	7461	36840	36.736	36.730	0.999827			0.466979	0.0021	0.027221	0.0043	0.0857	1.0010	0.0033	3.13	0.03
L2025-36 B11 Spike calb 11 D03-RPG	30.410	1.8445	0.3734	108.014	49.09%	0	9180	11355	56902	36.733	36.727	0.999833			0.466983	0.0022	0.027223	0.0058	-0.4330	1.0013	0.0027	1.31	0.02
L2025-36 B12 Spike calb 12 D03-RPG	30.180	1.8530	0.3751	107.640	49.10%	0	9145	11314	56887	36.739	36.732	0.999815			0.466988	0.0021	0.027219	0.0048	-0.3960	1.0012	0.0033	2.28	0.01
L2025-52 B01 SRM82+D02	50.000	0.0330	0.6328	300.9599	49.09%	0	25578	31642	1652	36.723	36.730	0.999932			0.467018	0.0016	0.027223	0.0031	0.3680	1.0009	0.0062	6.84	0.03
L2025-52 B02 SRM82+D02	50.000	0.0330	0.6328	300.9291	49.09%	0	25579	31641	1652	36.720	36.729	0.999960			0.467030	0.0024	0.027225	0.0043	-0.3460	1.0007	0.0064	6.73	0.03
L2025-52 B03 SRM82+D02	50.000	0.0330	0.6328	300.9016	49.09%	0	25579	31639	1652	36.729	36.723	0.999981			0.467001	0.0019	0.027227	0.0040	0.4297	1.0007	0.0090	11.52	0.03
L2025-52 B04 SRM82+D02	50.000	0.0330	0.6328	300.9343	49.09%	0	25578	31639	1652	36.731	36.726	0.999978			0.467028	0.0018	0.027225	0.0036	0.4629	1.0006	0.0093	7.75	0.03
Average all										36.7200	36.7164	0.9999602			0.467016	21	0.027233						
SD										0.0201	0.0181	0.000130			0.000662		0.000015						
SD%										0.0548	0.0484	0.0130			0.0132		0.0555						
Average large loads (L2025-52)										36.7307	36.7273	0.999908			0.467016	4	0.027225						
SD										0.0036	0.0062	0.000092			0.000029		0.000003						
SD%										0.0098	0.0168	0.0092			0.0062		0.0098						
L2025-14 B01 ET1x+D03 Merck	5.000	0.0087	0.0151	1.8615	99.20%	61	1.23	75	43	2342	749	0.31983	4559.66	0.18	0.623643	0.0124	0.000403	3.64	0.7774	1.0007	0.0079	10.49	0.05
L2025-14 B02 ET1x+D03 Merck	5.000	0.0076	0.0151	1.8615	99.19%	60	1.24	75	38	2312	740	0.31995	4559.66	0.22	0.623631	0.0149	0.000469	3.62	0.9407	1.0008	0.0091	2.65	0.00
L2025-14 B03 ET1x+D03 Merck	5.000	0.0087	0.0151	1.8613	99.20%	60	1.23	75	43	2327	744	0.31985	4559.64	0.20	0.623647	0.0135	0.000406	3.61	0.7143	1.0008	0.0072	9.34	0.01
L2025-14 B04 ET																							