

## *Supporting information*

## Improved Pb-free Sn-Bi Alloy Mounting Technique for Ion Probe U-Pb Analyses of Zircon

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**Table S1.** Results of SIMS U–Pb dating for 91500 zircon standard

AMM#01	1.8415	2.0	0.1791	1.6	0.78	1057.0	23.7	1060.4	12.7	1062.1	14.7	82	29	17	0.36	0.12	0.02
AMM#02	1.8307	2.3	0.1779	1.6	0.67	1058.2	33.1	1056.5	14.8	1055.8	14.6	82	29	17	0.36	0.07	0.01
AMM#03	1.8722	1.9	0.1792	1.6	0.82	1089.6	20.5	1071.3	12.1	1062.4	14.7	82	29	17	0.36	0.09	0.02
AMM#04	1.8321	2.0	0.1795	1.6	0.78	1041.8	24.5	1057.0	12.8	1064.4	14.8	81	29	17	0.36	0.13	0.03
AMM#05	1.8195	2.1	0.1777	1.6	0.77	1049.1	25.0	1052.5	12.9	1054.1	14.6	82	29	17	0.36	0.09	0.02
AMM#06	1.8357	2.0	0.1792	1.6	0.81	1049.9	21.8	1058.3	12.3	1062.4	14.8	82	29	17	0.36	0.13	0.03
AMM#07	1.8497	2.0	0.1777	1.6	0.80	1081.9	22.4	1063.3	12.5	1054.3	14.8	82	29	17	0.36	0.07	0.01
AMM#08	1.8919	2.1	0.1819	1.6	0.78	1080.6	24.9	1078.2	13.3	1077.1	15.4	78	28	17	0.35	0.02	0.01
AMM#09	1.8663	2.1	0.1812	1.6	0.77	1060.2	25.1	1069.2	13.0	1073.7	14.9	80	28	17	0.35	0.17	0.03
<i>Mean</i>												81	29	17	0.36	0.10	0.02
<i>Session 2</i>																	
MAM#01	1.8541	2.3	0.1772	1.6	0.67	1092.3	33.8	1064.9	15.3	1051.6	15.0	81	29	17	0.35	n.d.	n.d.
MAM#02	1.7915	2.8	0.1783	1.6	0.56	1010.6	45.2	1042.4	17.9	1057.6	14.8	83	29	17	0.35	0.07	0.01
MAM#03	1.8252	2.3	0.1733	1.6	0.68	1104.7	33.1	1054.5	15.2	1030.5	15.0	75	26	15	0.35	n.d.	n.d.
MAM#04	1.8731	2.2	0.1776	1.6	0.69	1108.2	31.3	1071.6	14.6	1053.7	14.7	79	28	17	0.35	n.d.	n.d.
MAM#05	1.8667	2.3	0.1824	1.6	0.71	1047.9	31.3	1069.4	14.8	1079.9	15.6	82	29	18	0.36	n.d.	n.d.
MAM#06	1.8647	2.2	0.1812	1.6	0.71	1059.1	30.0	1068.7	14.3	1073.4	15.2	82	29	18	0.36	0.04	n.d.
MAM#07	1.8686	3.0	0.1798	1.6	0.51	1078.1	49.8	1070.0	19.7	1066.1	14.9	82	29	17	0.36	n.d.	n.d.
MAM#08	1.9128	2.3	0.1832	1.7	0.73	1088.3	30.8	1085.6	15.2	1084.2	16.3	79	29	17	0.36	n.d.	n.d.
MAM#09	1.8520	2.1	0.1813	1.6	0.71	1043.8	30.3	1064.1	14.2	1074.1	15.0	83	29	18	0.35	0.10	0.01
MAM#10	1.8273	2.3	0.1768	1.6	0.68	1067.4	32.7	1055.3	14.9	1049.5	14.9	79	29	17	0.36	0.07	0.01
MAM#11	1.9120	2.3	0.1830	1.6	0.71	1088.9	31.0	1085.3	14.8	1083.5	15.6	78	28	17	0.36	n.d.	n.d.
MAM#12	1.9038	2.2	0.1831	1.7	0.74	1079.3	29.3	1082.4	14.8	1084.0	16.3	82	29	18	0.36	n.d.	n.d.
MAM#13	1.7784	2.2	0.1775	1.6	0.71	1004.5	30.4	1037.6	14.0	1053.4	14.7	82	30	17	0.36	0.06	0.01
<i>Mean</i>												80	29	17	0.36	0.03	0.002

**Table S2.** Results of SIMS U-Pb dating for Plešovice zircon standard

Sample	$^{207}\text{Pb}/^{235}\text{U}$	$\pm \sigma$ (%)	$^{206}\text{Pb}/^{238}\text{U}$	$\pm \sigma$ (%)	$\rho$	$^{207}\text{Pb}/^{206}\text{Pb}$ age	$\pm \sigma$	$^{207}\text{Pb}/^{235}\text{U}$ age	$\pm \sigma$	$^{206}\text{Pb}/^{238}\text{U}$ age	$\pm \sigma$	[U] ppm	[Th] ppm	[Pb] ppm	Th/U	$f_{206}$ (%)	$^{204}\text{Pb}$ (cps/nA)
<i>Session 1</i>																	
EPM#01	0.3997	1.8	0.0543	1.6	0.89	345.0	17.0	341.4	4.9	340.9	5.0	669	63	39	0.09	0.04	0.02
EPM#02	0.3918	1.8	0.0534	1.6	0.87	339.6	19.1	335.7	4.9	335.1	4.9	510	48	29	0.09	0.03	0.01
EPM#03	0.3885	1.8	0.0535	1.6	0.87	316.0	19.3	333.3	4.9	335.8	4.9	656	59	38	0.09	0.03	0.01
EPM#04	0.3965	1.8	0.0535	1.6	0.91	360.9	15.1	339.1	4.8	336.0	5.0	765	72	44	0.09	0.01	0.01
EPM#05	0.3972	1.8	0.0536	1.6	0.90	360.5	16.3	339.6	4.8	336.6	4.9	915	98	53	0.11	0.00	n.d.
EPM#06	0.3999	1.8	0.0544	1.6	0.88	344.2	18.0	341.6	4.9	341.2	5.0	777	79	46	0.10	0.01	0.01
EPM#07	0.3953	1.7	0.0545	1.6	0.91	313.6	15.3	338.3	4.7	341.9	5.0	795	79	47	0.10	0.04	0.02
EPM#08	0.3983	1.7	0.0543	1.6	0.92	335.2	14.4	340.4	4.7	341.1	5.0	860	98	51	0.11	0.03	0.02
EPM#09	0.4128	1.8	0.0562	1.6	0.89	338.6	17.3	350.9	5.0	352.8	5.2	586	52	36	0.09	0.04	0.02
EPM#10	0.3991	1.8	0.0548	1.6	0.90	321.0	17.0	341.0	4.9	344.0	5.1	610	54	36	0.09	0.02	0.01
EPM#11	0.3968	1.7	0.0540	1.6	0.92	341.5	14.7	339.3	4.7	339.0	5.0	860	88	50	0.10	0.02	0.01
<i>Mean</i>												727	72	43	0.10	0.02	0.01
MAM#01	0.3993	1.8	0.0541	1.6	0.88	352.2	18.3	341.1	5.0	339.5	5.0	1129	102	66	0.09	0.01	0.02
MAM#02	0.3907	2.0	0.0535	1.6	0.79	328.4	26.6	334.9	5.5	335.8	4.9	1455	145	84	0.10	0.01	0.03
MAM#03	0.4003	1.7	0.0539	1.6	0.94	367.5	12.0	341.9	4.6	338.1	5.0	1254	115	73	0.08	0.03	0.04
<i>Mean</i>												1279	121	74	0.10	0.02	0.03
AMM#01	0.3872	1.8	0.0532	1.6	0.87	320.3	19.3	332.3	4.9	334.0	4.9	733	69	42	0.09	0.02	0.01
AMM#02	0.3907	1.7	0.0529	1.6	0.91	351.0	15.2	334.9	4.7	332.6	4.9	816	80	47	0.10	0.02	0.01
AMM#03	0.3939	1.7	0.0534	1.6	0.93	351.0	13.9	337.2	4.7	335.2	4.9	983	106	57	0.11	0.02	0.01
AMM#04	0.4001	1.7	0.0541	1.6	0.93	356.1	13.8	341.7	4.7	339.6	5.0	1011	110	60	0.11	0.03	0.02

<b>AMM#05</b>	0.3889	1.8	0.0532	1.6	0.86	331.0	20.3	333.6	5.0	333.9	4.9	590	53	34	0.09	0.09	0.04
<b>AMM#06</b>	0.3977	1.7	0.0540	1.6	0.92	347.6	14.8	340.0	4.8	338.9	5.0	857	87	50	0.10	0.01	0.01
<b>AMM#07</b>	0.4048	1.7	0.0552	1.6	0.93	336.1	13.9	345.1	4.8	346.5	5.1	1025	144	62	0.14	0.03	0.02
<b>AMM#08</b>	0.3921	1.7	0.0536	1.6	0.93	329.2	13.8	335.9	4.7	336.8	4.9	1000	109	58	0.11	0.01	0.01
<b>AMM#09</b>	0.4000	1.7	0.0541	1.6	0.92	353.3	14.2	341.6	4.7	339.9	5.0	964	107	57	0.11	0.03	0.02
<b>AMM#10</b>	0.4005	1.7	0.0544	1.6	0.92	347.2	14.0	342.0	4.7	341.3	5.0	965	103	57	0.11	0.02	0.02
<i>Mean</i>												894	97	52	0.1	0.03	0.02
<i>Session 2</i>																	
<b>MAM#01</b>	0.4106	2.1	0.0561	1.6	0.74	333.4	31.7	349.3	6.2	351.7	5.3	1235	115	75	0.09	0.05	0.01
<b>MAM#02</b>	0.3997	2.3	0.0546	1.6	0.70	331.2	35.3	341.5	6.4	343.0	5.2	1142	115	68	0.10	0.01	0.00
<b>MAM#03</b>	0.3896	2.2	0.0533	1.6	0.69	330.9	35.5	334.0	6.2	334.5	4.9	1024	97	59	0.09	0.02	0.00
<b>MAM#04</b>	0.3867	1.9	0.0528	1.6	0.83	334.0	23.3	332.0	5.2	331.7	4.9	1378	120	79	0.09	0.03	0.01
<b>MAM#05</b>	0.3998	2.0	0.0550	1.6	0.76	318.1	29.0	341.5	5.8	344.9	5.1	1241	152	74	0.12	0.01	0.00
<b>MAM#06</b>	0.3995	1.9	0.0547	1.6	0.83	328.2	22.8	341.3	5.3	343.2	5.0	1385	146	82	0.11	n.d.	n.d.
<b>MAM#07</b>	0.4045	2.1	0.0554	1.6	0.77	326.8	29.9	344.9	6.1	347.6	5.4	1168	128	70	0.11	n.d.	n.d.
<b>MAM#08</b>	0.4015	2.7	0.0537	1.6	0.56	379.9	49.3	342.7	7.8	337.3	4.9	752	63	44	0.08	0.12	0.02
<b>MAM#09</b>	0.3977	1.9	0.0543	1.6	0.79	335.8	26.1	340.0	5.5	340.6	5.0	1135	108	67	0.10	0.03	0.01
<b>MAM#10</b>	0.3878	2.1	0.0528	1.6	0.73	341.2	31.1	332.8	5.8	331.6	4.9	1189	113	68	0.10	0.05	0.01
<b>MAM#11</b>	0.3942	2.2	0.0541	1.6	0.71	323.8	33.9	337.4	6.1	339.4	5.0	1234	147	73	0.12	0.03	0.01
<i>Mean</i>												1171	118	69	0.10	0.03	0.01