

Supplementary Online Material

Electrical conductivity of HCl-bearing aqueous fluids to 700 °C and 1 GPa

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Table 1. Summary of conductivity measurements

Run No. dd.mm.yy	Gasket	c _{HCl} mol/l	T _h heating °C	T _h cooling °C	Zircon	T °C	P MPa	ρ g/cm ³	σ S/m
25.04.17	Re-Au	1	< 25	< 25	+	100	237	1.044	54.8
						125	305	1.050	62.7
						150	385	1.055	69.8
						200	485	1.051	81.3
						175	455	1.058	77.1
						150	409	1.060	71.4
						125	346	1.060	64.4
						100	306	1.062	57.1
27.04.17	Re-Au	1	< 25	n.d.	+	100	312	1.066	57.7
						150	406	1.062	71.5
						175	444	1.057	77.1
						200	480	1.052	81.5
						225	474	1.034	83.4
						250	417	1.004	84.4
						250	417	1.004	84.6
						225	397	1.013	81.4
						200	353	1.015	78.4
						175	282	1.012	73.1
						150	233	1.012	67.7
						125	153	1.003	60.8
						100	103	1.001	53.1

03.05.17	Re-Au	1	< 25	n.d.	+	100	201	1.034	56.7
						150	286	1.029	69.9
						175	353	1.032	75.6
						200	383	1.025	80.3
09.05.17	Re-Au	1	41	< 25	+	100	146	1.012	63.8
						100	146	1.012	64.6
						125	180	1.015	69.0
						150	259	1.021	78.0
						175	304	1.019	84.6
						200	370	1.021	90.2
						175	317	1.021	85.2
						150	307	1.034	79.9
						150	307	1.034	78.6
						125	227	1.027	71.2
						100	180	1.027	63.1
11.05.17	Re-Au	1	196	n.d.	+	200	9.1	0.868	74.9
						225	61	0.878	79.4
						250	85	0.867	83.9
						275	157	0.885	86.8
						300	170	0.869	89.1
						300	170	0.869	89.2
						325	190	0.857	89.8
19.05.17	Re-Au	1	144	99	+	150	51	0.943	69.4
						175	93	0.942	75.1
						200	140	0.942	80.1
						225	204	0.949	83.7
						250	234	0.942	86.0
						275	284	0.941	87.6
						300	310	0.935	88.5

						275	260	0.932	87.0
						250	249	0.948	85.1
						225	183	0.941	82.7
						200	158	0.949	79.5
						175	124	0.955	75.4
						125	64	0.969	63.7
						100	41	0.975	57.8
23.05.17	Re-Au	1	98	n.d.	+	150	201	1.003	73.5
						175	245	1.001	77.7
						200	281	0.994	79.4
						225	321	0.991	82.0
						250	361	0.988	83.7
						275	388	0.980	84.8
						325	445	0.960	86.4
						350	457	0.951	87.1
						375	480	0.947	86.3
09.01.18	Ir-Au	1	< 25	n.d.	+	100	171	1.024	63.4
						125	181	1.012	71.3
						150	279	1.027	77.4
						175	348	1.031	83.3
						200	373	1.022	87.6
						225	463	1.031	90.7
						250	505	1.026	94.6
						275	503	1.011	97.5
12.01.18	Ir-Au	1	< 25	n.d.	+	100	197	1.033	64.8
						125	244	1.032	72.6
						150	282	1.028	79.8
						175	324	1.024	84.8
						200	388	1.026	89.4

						225	422	1.020	93.1
						250	451	1.013	96.4
26.02.18	lr	1	< 25	65	+	100	271	1.055	66.2
						125	332	1.057	74.5
						150	395	1.059	81.5
						175	454	1.059	87.7
						200	518	1.060	92.8
						225	545	1.052	96.6
						250	597	1.049	100.5
						275	644	1.047	103.6
						300	699	1.046	105.9
						325	764	1.046	107.9
						350	835	1.047	109.6
						375	860	1.040	110.6
						400	923	1.041	110.8
						400	630	0.972	110.9
						375	577	0.972	111.9
						350	536	0.975	112.4
						325	421	0.955	112.3
						300	437	0.977	111.2
						275	389	0.978	109.0
						250	332	0.977	106.3
						225	343	0.997	102.8
						200	314	1.005	97.9
						175	278	1.010	92.5
						150	240	1.015	85.5
						125	197	1.017	77.5
						100	187	1.030	68.2
28.02.18	lr	1	< 25	n.d.	+	100	228	1.042	63.4
						125	291	1.045	71.1

150	348	1.046	78.2
175	413	1.048	84.4
200	462	1.046	89.7
225	504	1.042	94.2
250	568	1.043	97.7
275	620	1.040	100.6
300	666	1.037	102.9
325	735	1.039	104.7
350	804	1.041	106.1
375	866	1.042	107.1
400	931	1.043	107.7
425	984	1.041	107.4
450	1043	1.042	108.0

20.12.16	Re-Au	0.1	121	120	-	150	49	0.942	6.34
						200	140	0.942	7.23
						250	238	0.942	7.77
						200	140	0.942	7.48
						150	49	0.942	6.62
22.12.16	Re-Au	0.1	107	104	-	150	73	0.954	6.65
						200	166	0.954	7.58
						250	264	0.954	8.05
						300	365	0.954	8.21
						350	472	0.954	8.22
						300	373	0.954	8.25
						250	274	0.954	8.43
						200	174	0.954	8.27
						150	80	0.954	7.55
09.01.17	Re-Au	0.1	122	115	-	150	49	0.944	6.66
						200	138	0.944	7.57

						250	234	0.944	8.07
						300	332	0.944	8.29
						350	429	0.944	8.35
						400	545	0.944	7.56
						350	448	0.944	8.95
						300	349	0.944	8.94
						250	250	0.944	8.73
						200	153	0.944	8.23
						150	61	0.944	7.32
17.01.17	Re-Au	0.1	60	71	-	100	59	0.983	5.75
						125	100	0.983	6.37
						150	131	0.983	6.92
						125	87	0.983	6.41
						100	44	0.983	5.68
						100	31	0.977	5.68
						150	119	0.977	6.96
						175	167	0.977	7.40
						200	216	0.977	7.74
						150	163	0.977	6.95
						100	77	0.977	5.90
25.01.17	Re-Au	0.1	33	49	-	150	179	0.988	7.09
						200	281	0.988	8.08
						250	389	0.988	8.72
						275	444	0.988	8.97
						300	477	0.988	9.15
						277	427	0.988	8.90
						250	368	0.988	8.65
						201	264	0.988	8.10
						150	161	0.988	7.17
						125	114	0.988	6.55

						101	72	0.988	5.87
27.01.17	Re-Au	0.1	133	110	-	150	29	0.932	6.67
						200	118	0.932	7.42
						250	212	0.932	7.90
						300	307	0.932	8.32
						325	355	0.932	8.58
						350	403	0.932	8.93
						326	357	0.932	8.64
						300	307	0.932	8.30
						250	212	0.932	8.10
						200	118	0.932	7.76
						152	32	0.932	6.81
30.01.17	Re-Au	0.1	135	145	-	150	25	0.922	6.32
						175	69	0.922	6.53
						200	114	0.922	6.72
						250	207	0.922	7.19
						300	303	0.922	7.54
						325	350	0.922	7.83
						349	396	0.922	8.09
						375	446	0.922	8.23
						400	467	0.922	8.35
02.02.17	Re-Au	0.1	135	139	-	200	114	0.927	7.17
						250	207	0.927	7.36
						300	303	0.927	7.53
						349	396	0.927	7.69
						374	444	0.927	8.01
11.08.17	Re-Au	0.1	331	317	-	350	28	0.675	5.05
						355	32	0.675	4.91

355	32	0.675	4.82
373	47	0.675	4.43
398	68	0.675	4.09
425	91	0.675	3.83
450	112	0.675	3.89
473	132	0.675	4.20
475	136	0.675	4.28
500	184	0.675	4.60
499	183	0.675	4.51
475	160	0.675	4.28
452	138	0.675	4.26
426	113	0.675	4.49
399	87	0.675	4.84
375	65	0.675	5.26
350	41	0.675	5.70
325	18	0.675	6.17

14.08.17	Re-Au	0.1	312	342	-	375	71	0.686	5.96
						400	96	0.686	5.69
						425	120	0.686	5.40
						445	140	0.686	5.19
						476	171	0.686	5.02
						500	195	0.686	4.73
						524	212	0.686	4.54
						550	210	0.686	4.50
						575	212	0.604	4.45
						525	153	0.604	3.27
						502	135	0.604	3.39
						476	115	0.604	3.72
						450	95	0.604	3.87
						424	75	0.604	4.02
						399	56	0.604	4.18

						375	39	0.604	4.36
						351	21	0.604	4.56
17.08.17	Re-Au	0.1	335	n.d.	-	350	25	0.626	5.41
						374	45	0.626	5.23
						399	64	0.626	5.10
						425	85	0.626	5.01
						448	104	0.626	4.97
						475	127	0.626	4.91
						500	147	0.626	4.90
						525	168	0.626	4.91
						550	189	0.626	4.94
						575	210	0.626	4.90
04.09.17	Re-Au	0.1	106	54	+	125	31	0.954	7.25
						152	78	0.954	7.90
						174	119	0.954	8.46
						198	164	0.954	8.92
						201	187	0.961	9.00
						175	128	0.957	8.53
						150	78	0.956	7.98
						125	68	0.971	7.35
						100	8.1	0.963	6.57
05.09.17	Re-Au	0.1	157	91	+	151	22	0.928	7.09
						173	64	0.930	7.67
						199	109	0.929	8.21
						226	126	0.915	8.66
						250	210	0.932	9.07
						275	278	0.941	9.46
						300	304	0.932	9.80
						275	277	0.939	9.60

						248	231	0.941	9.24
						224	181	0.940	8.88
						200	109	0.926	8.47
						174	85	0.938	8.03
						151	37	0.934	7.50
						125	23	0.950	6.81
07.09.17	Re-Au	0.1	n.d.	118	+	149	106	0.968	6.98
						198	185	0.962	7.87
						226	222	0.955	8.31
						251	259	0.951	8.62
						275	315	0.954	8.91
						302	349	0.947	9.26
						327	360	0.933	9.75
						349	322	0.906	10.37
						374	337	0.890	10.57
						401	398	0.895	10.68
						380	372	0.901	10.70
						347	301	0.894	10.62
						325	252	0.890	10.49
						298	254	0.912	10.22
						272	213	0.914	9.90
						250	140	0.899	9.58
						226	143	0.921	9.24
						199	83	0.915	8.81
						149	39	0.937	7.80
02.10.17	Re-Au	0.1	92	164	+	150	138	0.986	7.87
						200	187	0.967	8.80
						250	272	0.956	9.36
						300	351	0.948	9.98
						324	389	0.946	10.41

350	440	0.946	10.77
375	467	0.938	11.04
400	481	0.927	11.22
427	504	0.917	11.16
449	474	0.893	10.85
475	415	0.852	10.36
500	431	0.840	9.48
450	324	0.826	10.01
400	267	0.835	10.36
350	199	0.840	10.48
301	149	0.856	10.31
250	67	0.854	9.87

06.10.17	Re-Au	0.1	120	234	+	150	49	0.942	8.48
						200	149	0.948	9.46
						250	265	0.953	10.01
						300	272	0.919	10.32
						350	347	0.911	10.83
						400	320	0.863	10.77
						425	304	0.835	10.81
						451	388	0.855	10.73
						475	332	0.810	10.52
						500	385	0.82	10.18
						525	405	0.813	9.37
						550	358	0.770	8.45
						575	387	0.769	7.72
						600	343	0.723	6.50
						550	283	0.719	6.92
						499	201	0.692	7.48
						449	124	0.658	7.88
						400	82	0.664	8.45
						350	27	0.633	8.87

10.10.17	Re-Au	0.1	138	n.d.	+	100	62	0.985	5.72
						148	87	0.960	7.87
						199	178	0.960	8.92
						250	266	0.954	9.59
						300	347	0.947	9.90
						350	425	0.940	10.09
						400	466	0.921	9.97
						450	491	0.898	9.67
						500	530	0.882	9.16
						525	530	0.867	8.73
						550	529	0.852	8.11
						575	530	0.837	7.45
						599	490	0.805	6.69
						625	450	0.770	5.96
						643	382	0.718	5.03
16.10.17	Re-Au	0.1	< 25	< 25	+	100	545	1.120	6.76
						124	616	1.123	7.46
						150	718	1.129	8.10
						175	770	1.126	8.57
						200	827	1.123	8.96
						225	862	1.117	9.22
						249	886	1.109	9.40
						275	879	1.095	9.52
						300	842	1.075	9.57
						275	717	1.062	9.32
						250	665	1.064	9.14
						226	600	1.063	8.90
						201	562	1.069	8.60
						175	501	1.069	8.20
						150	459	1.073	7.73

						123	410	1.077	7.15
18.10.17	Re-Au	0.1	< 25	176	+	100	454	1.100	6.46
						125	512	1.099	7.14
						150	575	1.100	7.69
						175	609	1.093	8.17
						200	660	1.092	8.54
						225	713	1.088	8.86
						250	760	1.085	9.12
						275	808	1.081	9.30
						300	773	1.061	9.35
						325	156	0.837	7.06
						350	188	0.833	7.35
						375	259	0.851	7.56
						400	338	0.870	7.66
						424	399	0.880	7.86
						450	465	0.889	7.78
						450	465	0.889	7.79
						475	510	0.889	7.65
24.10.17	Re-Au	0.1	n.d.	n.d.	+	100	102	1000	5.79
						125	130	0.994	6.54
						150	178	0.996	7.12
						175	217	0.991	7.65
						200	302	1.002	8.10
						225	356	1.002	8.42
						250	389	0.995	8.68
						275	390	0.978	8.89
						301	446	0.979	9.06
						329	514	0.979	9.14
						352	539	0.974	9.24
						375	582	0.973	9.27

400	580	0.958	9.25
424	375	0.868	8.30
450	414	0.868	8.13
475	438	0.861	8.11
500	477	0.862	8.10
525	496	0.853	7.98

15.02.17	Re-Au	0.01	< 25	< 25	-	100	92.6	0.997	0.78
						125	137	0.997	0.90
						150	185	0.997	1.00
						175	236	0.997	1.06
						200	289	0.997	1.12
						225	342	0.997	1.18
						250	397	0.997	1.23
						226	344	0.997	1.19
						203	295	0.997	1.15
						175	236	0.997	1.09
						151	187	0.997	1.02
						126	139	0.997	0.93
						102	96.0	0.997	0.82

16.02.17	Re-Au	0.01	< 25	< 25	-	100	92.6	0.997	0.79
						125	137	0.997	0.87
						149	183	0.997	0.97
						175	236	0.997	1.06
						200	289	0.997	1.12
						225	342	0.997	1.17
						250	397	0.997	1.22
						275	452	0.997	1.26
						299	505	0.997	1.30
						275	452	0.997	1.26
						251	399	0.997	1.23

						226	344	0.997	1.20
						200	289	0.997	1.17
						176	238	0.997	1.12
						151	187	0.997	1.03
						125	137	0.997	0.92
						100	94.3	0.997	0.80
21.02.17	Re-Au	0.01	125	117	-	130	8.4	0.939	0.89
						154	49.4	0.939	0.99
						200	133	0.939	1.12
						250	228	0.939	1.22
						300	325	0.939	1.31
						325	374	0.939	1.34
						350	422	0.939	1.36
						375	471	0.939	1.41
28.02.17	Re-Au	0.01	108	110	-	120	19.5	0.952	0.92
						150	71.2	0.952	1.04
						200	164	0.952	1.13
						250	262	0.952	1.14
						300	362	0.952	1.24
27.03.17	Re-Au	0.01	139	154	-	175	62.0	0.927	1.09
						200	107	0.927	1.18
						228	158	0.927	1.19
						250	199	0.927	1.62
						276	248	0.927	1.42
						300	294	0.927	1.43
						325	341	0.913	1.49
						350	388	0.913	1.55
						375	436	0.913	1.63
						400	483	0.913	1.70

450	576	0.913	1.52
450	557	0.913	1.13
400	503	0.913	1.38
400	449	0.913	1.37
350	345	0.913	1.41
300	260	0.913	1.40
250	165	0.913	1.45
200	124	0.913	1.35
200	81.0	0.913	1.25

02.11.17	Re-Au	0.01	< 25	< 25	+	100	381	1.084	0.88
						125	464	1.089	1.00
						150	514	1.087	1.11
						175	576	1.087	1.21
						200	638	1.083	1.31
						224	680	1.082	1.42
						250	713	1.076	1.51
						275	700	1.058	1.57
						300	712	1.048	1.61
						276	643	1.046	1.55
						251	590	1.047	1.48
						225	535	1.049	1.40
						201	486	1.051	1.32
						175	439	1.055	1.21
						151	391	1.057	1.08
						125	340	1.058	0.95
						100	305	1.063	0.81

03.11.17	Re-Au	0.01	< 25	110	+	100	425	1.094	0.79
						125	469	1.091	0.89
						150	531	1.090	1.01
						175	574	1.087	1.12

200	619	1.083	1.24
225	667	1.079	1.35
250	743	1.081	1.44
275	742	1.068	1.51
300	738	1.054	1.56
325	718	1.036	1.58
350	721	1.024	1.57
375	693	1.003	1.49
400	410	0.902	1.38
375	376	0.904	1.35
350	324	0.902	1.33
325	282	0.903	1.31
300	238	0.902	1.29
275	199	0.906	1.26
250	175	0.916	1.22
225	128	0.915	1.18
176	73.3	0.932	1.05
150	19.4	0.927	0.96

08.11.17	Re-Au	0.01	< 25	110	+	100	105	1.018	0.77
						125	143	1.016	0.88
						150	192	1.016	0.98
						175	249	1.017	1.07
						200	288	1.012	1.14
						225	320	1.006	1.19
						250	374	1.005	1.23
						275	411	1.000	1.27
						300	443	0.993	1.30
						325	492	0.992	1.32
						350	549	0.993	1.34
						375	605	0.993	1.36
						400	636	0.987	1.37

						424	677	0.985	1.41
						451	393	0.877	1.31
						475	326	0.831	1.21
						498	378	0.842	1.20
						451	323	0.850	1.21
						400	268	0.861	1.21
						350	194	0.864	1.20
13.11.17	Re-Au	0.01	234	352	+	375	204	0.819	1.23
						400	241	0.820	1.24
						425	262	0.811	1.25
						450	292	0.808	1.26
						474	308	0.798	1.25
						500	342	0.797	1.24
						526	391	0.805	1.24
						550	426	0.806	1.21
						577	461	0.807	1.20
						601	353	0.729	1.10
						622	226	0.601	0.84
						650	282	0.636	0.82
						674	276	0.613	0.72
						700	221	0.529	0.62
14.12.17	Ir-Au	0.01	< 25	134	+	100	148	1.017	0.75
						125	217	1.024	0.85
						150	283	1.028	0.94
						175	329	1.025	1.01
						202	360	1.018	1.08
						225	398	1.013	1.13
						250	464	1.016	1.17
						275	520	1.016	1.21
						299	566	1.013	1.24

325	578	1.001	1.26
350	666	1.009	1.28
375	678	0.998	1.29
399	662	0.982	1.29
425	659	0.966	1.30
450	691	0.961	1.30
476	674	0.942	1.32
499	588	0.903	1.28
475	440	0.863	1.29
450	424	0.871	1.30
425	395	0.876	1.30
400	349	0.874	1.31
375	335	0.887	1.30
350	271	0.875	1.30
325	257	0.892	1.28
300	209	0.888	1.27
275	216	0.914	1.25
250	113	0.883	1.21
225	115	0.909	1.17
200	69.3	0.906	1.12
175	25.0	0.907	1.04
150	14.9	0.925	0.95

18.12.17	Ir-Au	0.01	< 25	198	+	100	273	1.056	0.82
						125	364	1.065	0.92
						150	434	1.068	1.01
						175	473	1.063	1.10
						200	558	1.069	1.17
						225	617	1.068	1.22
						250	660	1.064	1.27
						275	705	1.060	1.31
						300	726	1.050	1.34

325	766	1.046	1.36
350	832	1.047	1.38
375	838	1.036	1.40
400	828	1.020	1.40
425	819	1.006	1.39
450	774	0.983	1.39
475	794	0.975	1.38
502	767	0.954	1.37
525	708	0.926	1.35
550	679	0.904	1.32
576	602	0.864	1.29
597	652	0.870	1.26

22.12.17	Ir-Au	0.01	133	n.d.	+	150	104	0.967	0.99
						175	131	0.958	1.08
						200	205	0.968	1.15
						225	221	0.955	1.21
						250	294	0.964	1.26
						275	329	0.958	1.29
						300	380	0.958	1.32
						325	424	0.956	1.35
						350	463	0.953	1.37
						375	536	0.960	1.38
						400	587	0.960	1.39
						425	614	0.954	1.39
						450	692	0.961	1.39
						475	684	0.946	1.39
						500	727	0.944	1.37
						525	748	0.937	1.35
						550	739	0.922	1.32
						575	747	0.912	1.29
						600	711	0.888	1.25

625	695	0.87	1.21
650	688	0.855	1.17

“Gasket” specifies the gasket material in the experiment; c_{HCl} is the concentration (in moles per liter at ambient conditions) of the aqueous HCl solution loaded into the cell; T_h are homogenization temperatures measured upon heating or cooling; T is temperature, P is pressure, ρ is density, and σ is electrical conductivity. “Zircon” specifies whether a zircon sensor was used to determine pressure (+) or not (-); “n.d.” means “not determined”