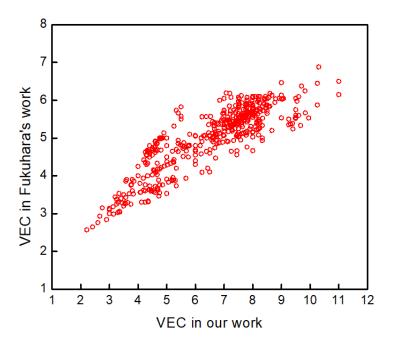
#### **Supplementary Information**

# Machine Learning Guided Appraisal and Exploration of Phase Design for High Entropy Alloys

Ziqing Zhou<sup>1</sup>, Yeju Zhou<sup>2</sup>, Quanfeng He<sup>1</sup>, Zhaoyi Ding<sup>1</sup>, Fucheng Li<sup>1</sup>, Yong Yang<sup>1,3,\*</sup>

- <sup>1.</sup> Department of Mechanical Engineering, College of Engineering, City University of Hong Kong, Kowloon Tong, Kowloon, Hong Kong SAR, China
- <sup>2.</sup> Department of Computer Science and Engineering, School of Engineering, The Hong Kong University of Science and Technology, Clear Water Bay, Kowloon, Hong Kong SAR, China
- <sup>3.</sup> Department of Materials Science and Engineering, College of Engineering, City University of Hong Kong, Kowloon Tong, Kowloon, Hong Kong SAR, China

\*Corresponding author. Email: <a href="mailto:yonyang@cityu.edu.hk">yonyang@cityu.edu.hk</a>



**Supplementary Figure 1.** The plot of the VECs with different definitions

## **Supplementary Table 1** The 13 features models testing accuracy for 10 times of training, attached with the mean value and the standard deviation.

Madala		CNN			SVM			ANN	
Models	AM	IM	SS	AM	IM	SS	AM	IM	SS
1	96.70%	92.20%	96.70%	95.60%	93.30%	96.70%	98.90%	90.00%	96.70%
2	96.70%	95.60%	95.60%	95.60%	93.30%	96.70%	92.20%	94.40%	96.70%
3	95.60%	94.40%	96.70%	95.60%	94.40%	95.60%	94.40%	93.30%	95.60%
4	96.70%	95.60%	95.60%	95.60%	91.10%	95.60%	95.60%	91.10%	97.80%
5	94.40%	91.10%	96.70%	93.30%	91.10%	95.60%	94.40%	92.20%	95.60%
6	94.40%	92.20%	97.80%	97.80%	94.40%	95.60%	94.40%	90.00%	95.60%
7	96.70%	94.40%	98.90%	96.70%	93.30%	98.90%	97.80%	95.60%	97.80%
8	96.70%	92.20%	96.70%	97.80%	93.30%	96.70%	98.90%	90.00%	96.70%
9	94.40%	93.30%	95.60%	94.40%	91.10%	96.70%	93.30%	92.20%	97.80%
10	95.60%	93.30%	96.70%	97.80%	91.10%	96.70%	95.60%	92.20%	96.70%
Mean	95.79%	93.43%	96.70%	96.02%	92.64%	96.48%	95.55%	92.10%	96.70%
Standard deviation	1.00%	1.46%	0.98%	1.44%	1.32%	0.96%	2.19%	1.82%	0.85%

#### **Supplementary Table 2.** The sensitivity matrix of the ANN model for the AM phase

Features	а	δ	$T_m$	$\sigma_T$	$H_{mix}$	$\sigma_H$	Sid	χ	Δχ	VEC	$\sigma_{VEC}$	K	$\sigma_K$	Accuracy
13	10.91	3.00	21.62	-3.70	-2.89	14.63	5.03	-7.44	-6.72	8.41	7.37	-8.78	5.65	98.9%
10	13.48	-	30.89	-	-	24.61	1.15	-5.30	-8.18	8.12	12.68	-13.19	4.49	95.6%
9	2.78	-	38.55	-	-	24.31	-	-3.15	-3.90	14.20	13.64	-18.69	2.48	96.7%
6	-	-	40.70	-	-	24.80	-	-	-0.85	11.96	11.79	-21.69	-	93.3%
5	-	-	41.33	-	-	18.24	-	-	-	12.27	16.33	-14.39	-	92.2%

### **Supplementary Table 3.** The sensitivity matrix of the ANN model for the IM phase

Features	а	δ	$T_m$	$\sigma_T$	$H_{mix}$	σн	Sid	χ	Δχ	VEC	$\sigma_{VEC}$	K	$\sigma_{K}$	Accuracy
13	-16.07	5.04	-27.82	10.41	-3.69	-20.00	-8.38	14.01	9.30	-14.21	-6.01	7.31	-10.78	95.6%
11	-13.03	-	-36.54	9.80	-	-19.50	-11.80	14.05	10.40	-15.29	-2.31	15.77	-14.50	94.4%
10	-15.99	-	-32.22	12.22	-	-22.72	-12.72	14.79	8.53	-17.88	-	10.35	-15.03	92.2%

**Supplementary Table 4.** The sensitivity matrix of the ANN model for the SS phase

Features	а	δ	$T_m$	$\sigma_T$	$H_{mix}$	σн	Sid	χ	Δχ	VEC	σνες	K	$\sigma_K$	Accuracy
13	-3.03	-24.65	4.14	-3.41	13.64	10.15	15.95	-12.39	-8.63	9.19	-7.32	10.68	10.84	97.8%
10	-	-22.32	-	-	9.63	9.75	13.42	-18.86	-10.25	8.45	-13.17	14.41	6.78	98.9%

**Supplementary Table 5.** List of the data features and phases for 601 different as-cast alloys selected for our current study, including 163 binary alloys, 120 ternary alloys, 89 quaternary alloys, 126 quinary alloys, 72 senary alloys, 24 septenary alloys, 3 octonary alloys and 4 nonary alloys.

Feature	а	δ	$T_m$	$\sigma_T$	$H_{mix}$	σн	$S_{id}$	χ	Δχ	VEC	σνες	K	$\sigma_K$	ıse	Ref
Unit	Å		K	K	kJ/mol	kJ/mol	$J/(K\!\cdot\!mol)$					GPa	GPa	Phase	Re
						Binary All	oys								
AlB <sub>12</sub>	0.87	0.19	2239	377	0.00	0.00	0.27	2.01	0.11	3.00	0.00	301	65	IM	1
B <sub>4</sub> Co	0.91	0.19	2232	232	-15.36	3.46	0.50	2.01	0.06	4.20	2.40	292	56	IM	1
AlB <sub>2</sub>	1.02	0.28	1876	667	0.00	0.00	0.64	1.90	0.20	3.00	0.00	239	115	IM	1
HfB <sub>2</sub>	1.07	0.33	2401	74	-58.67	3.46	0.64	1.79	0.35	3.33	0.47	250	99	IM	1
BNi <sub>2</sub>	1.10	0.18	1935	292	-21.33	1.26	0.64	1.95	0.06	7.67	3.30	227	66	IM	1
BCr <sub>2</sub>	1.11	0.18	2236	79	-27.56	1.62	0.64	1.79	0.18	5.00	1.41	213	75	IM	1
BCo <sub>2</sub>	1.11	0.18	1961	273	-21.33	1.26	0.64	1.93	0.08	7.00	2.83	227	66	IM	1
BNi <sub>3</sub>	1.14	0.16	1883	268	-18.00	2.60	0.56	1.94	0.06	8.25	3.03	215	61	IM	1
Be <sub>17</sub> Ti <sub>2</sub>	1.16	0.09	1600	117	-11.30	5.74	0.34	1.57	0.01	2.21	0.61	128	6	IM	1
AuBe <sub>5</sub>	1.18	0.10	1523	83	0.00	0.00	0.45	1.73	0.36	3.50	3.35	145	34	IM	2
FeSi₂	1.18	0.04	1728	58	-31.11	1.83	0.64	1.88	0.03	5.33	1.89	123	33	IM	1
CrSi₂	1.19	0.04	1851	232	-32.89	1.94	0.64	1.82	0.11	4.67	0.94	120	28	IM	1
FeSi₂	1.20	0.04	1749	62	-35.00	0.00	0.69	1.87	0.04	6.00	2.00	135	35	IM	1
Be₃Nb	1.20	0.11	1858	515	-18.75	2.71	0.56	1.58	0.01	2.75	1.30	140	17	IM	2
Si <sub>2</sub> V	1.21	0.06	1852	234	-42.67	2.51	0.64	1.81	0.13	4.33	0.47	120	28	IM	1
Fe <sub>2</sub> Si	1.21	0.03	1770	58	-31.11	1.83	0.64	1.85	0.03	6.67	1.89	147	33	IM	1
MoSi <sub>2</sub>	1.22	0.08	2090	570	-31.11	1.83	0.64	1.99	0.12	4.67	0.94	143	61	IM	1
Cr₃Si	1.23	0.03	2057	213	-27.75	4.01	0.56	1.72	0.10	5.50	0.87	145	26	IM	2
Be₂Ti	1.24	0.13	1687	180	-26.67	1.57	0.64	1.56	0.01	2.67	0.94	123	9	IM	1
CrFe	1.25	0.00	1996	185	-1.00	0.00	0.69	1.75	0.09	7.00	1.00	165	5	IM	2
Cu <sub>0.76</sub> Si <sub>0.24</sub>	1.25	0.04	1437	141	-13.86	2.19	0.55	1.90	0.00	9.32	2.99	130	17	IM	1
Cu₃Ge	1.27	0.01	1321	63	-8.63	1.24	0.56	1.93	0.05	9.25	3.03	105	61	IM	1

Mo <sub>5</sub> Si <sub>3</sub>	1.28	0.08	2443	585	-32.81	1.06	0.66	2.06	0.13	5.25	0.97	181	63	IM	1
Co <sub>2</sub> V <sub>3</sub>	1.29	0.02	2017	203	-13.44	0.27	0.67	1.73	0.12	6.60	1.96	168	10	IM	1
Cu₃Sb	1.29	0.02	1244	197	5.25	0.76	0.56	1.94	0.07	9.50	2.60	116	42	IM	1
Fe <sub>3</sub> W <sub>2</sub>	1.29	0.05	2565	923	0.00	0.00	0.67	2.04	0.26	7.20	0.98	226	69	IM	1
Cu₂Sb	1.30	0.02	1206	214	6.22	0.37	0.64	1.95	0.07	9.00	2.83	107	46	IM	1
W <sub>6</sub> Fe <sub>7</sub>	1.30	0.05	2681	939	0.00	0.00	0.69	2.07	0.26	7.08	1.00	235	70	IM	2
Mo₃Si	1.31	0.07	2594	524	-26.25	3.79	0.56	2.10	0.11	5.50	0.87	198	56	IM	1
AuCu₃	1.32	0.05	1353	9	-6.75	0.97	0.56	2.06	0.28	11.0 0	0.00	160	35	IM	2
Pd <sub>75</sub> Si <sub>25</sub>	1.32	0.07	1793	61	-41.25	5.95	0.56	2.13	0.13	8.50	2.60	160	35	AM	3
CoZn	1.32	0.05	1230	538	-5.00	0.00	0.69	1.77	0.12	10.5 0	1.50	125	55	IM	1
Cu <sub>17</sub> Sn <sub>3</sub>	1.33	0.09	1230	304	3.57	1.22	0.42	1.91	0.02	9.95	2.50	128	29	IM	1
Cu₄In	1.33	0.08	1172	371	6.40	1.44	0.50	1.88	0.05	9.40	3.20	119	43	IM	1
Cr <sub>2</sub> Mn <sub>11</sub>	1.33	0.03	1621	238	1.04	0.35	0.43	1.57	0.04	6.85	0.36	126	14	IM	1
Pd <sub>82</sub> Si <sub>18</sub>	1.34	0.06	1803	54	-32.47	8.65	0.47	2.15	0.12	8.92	2.31	166	31	AM	3
Ni <sub>50</sub> Nb <sub>50</sub>	1.34	0.07	2239	511	-30.00	0.00	0.69	1.76	0.16	7.50	2.50	175	5	AM	4
AlNi	1.34	0.07	1331	397	-22.00	0.00	0.69	1.76	0.15	6.50	3.50	128	52	IM	1
Cu₂Ti	1.34	0.06	1552	275	-8.00	0.47	0.64	1.78	0.17	8.67	3.30	130	14	IM	1
Ni₃Sn	1.34	0.12	1422	530	-3.00	0.43	0.56	1.92	0.02	8.50	2.60	150	53	IM	2
AlCo	1.34	0.07	1351	417	-19.00	0.00	0.69	1.75	0.14	6.00	3.00	128	52	IM	1
Cu <sub>51</sub> Hf <sub>14</sub>	1.34	0.09	1605	472	-11.49	2.26	0.52	1.77	0.25	9.49	2.88	134	12	IM	1
Al <sub>4</sub> Cu <sub>5</sub>	1.35	0.06	1169	211	-0.99	0.01	0.69	1.77	0.14	7.44	3.98	112	32	IM	1
Cu <sub>51</sub> Zr <sub>14</sub>	1.35	0.10	1524	317	-15.55	3.06	0.52	1.78	0.23	9.49	2.88	125	28	IM	1
Cu₃Ti₂	1.35	0.07	1591	286	-8.64	0.18	0.67	1.76	0.18	8.20	3.43	128	15	IM	1
СоТі	1.36	0.08	1855	87	-28.00	0.00	0.69	1.71	0.17	6.50	2.50	145	35	IM	1
Cu <sub>4</sub> Ti <sub>3</sub>	1.36	0.07	1608	289	-8.82	0.09	0.68	1.75	0.18	8.00	3.46	127	15	IM	1
Cu <sub>10</sub> Sn <sub>3</sub>	1.36	0.11	1161	359	4.97	0.86	0.54	1.91	0.03	9.38	2.95	121	35	IM	1
AuCu	1.36	0.06	1348	10	-9.00	0.00	0.69	2.22	0.32	11.0 0	0.00	180	40	IM	2
Pd <sub>95</sub> Si <sub>5</sub>	1.36	0.04	1821	31	-10.45	9.71	0.20	2.19	0.07	9.70	1.31	176	17	AM	3
MgNi <sub>2</sub>	1.36	0.12	1460	379	-3.56	0.21	0.64	1.71	0.28	7.33	3.77	135	64	IM	2
Cu <sub>9</sub> In <sub>4</sub>	1.36	0.10	1072	428	8.52	0.68	0.62	1.86	0.06	8.54	3.69	107	49	IM	1
Al <sub>4</sub> Cu <sub>3</sub>	1.37	0.06	1115	210	-0.98	0.01	0.68	1.73	0.14	6.43	3.96	103	32	IM	1
AuSb₂	1.37	0.04	1048	204	-3.56	0.21	0.64	2.21	0.23	7.00	2.83	101	84	IM	1
Al <sub>2</sub> Fe	1.37	0.07	1226	414	-9.78	0.58	0.64	1.68	0.10	4.67	2.36	107	44	IM	1
Cu₅Ce	1.37	0.15	1310	107	-11.67	3.48	0.45	1.77	0.29	9.67	2.98	120	44	IM	1
Cu₂In	1.37	0.10	1048	437	8.89	0.52	0.64	1.86	0.06	8.33	3.77	104	50	IM	1
Al <sub>5</sub> Co <sub>2</sub>	1.38	0.06	1172	377	-15.51	1.58	0.60	1.69	0.12	4.71	2.71	106	47	IM	1
Al₂Cu	1.38	0.05	1075	200	-0.89	0.05	0.64	1.71	0.14	5.67	3.77	97	30	IM	1
AlSb	1.38	0.04	919	15	2.00	0.00	0.69	1.83	0.22	4.00	1.00	59	17	IM	1
Cu <sub>2</sub> Mg	1.39	0.11	1213	205	-2.67	0.16	0.64	1.70	0.28	8.00	4.24	108	45	IM	2
Al <sub>9</sub> Mn <sub>11</sub>	1.39	0.03	1256	291	-18.81	0.09	0.69	1.58	0.03	5.20	1.99	100	22	IM	1
Al <sub>8</sub> V <sub>5</sub>	1.39	0.04	1414	608	-15.15	0.41	0.67	1.62	0.01	3.77	0.97	108	41	IM	1
Cu <sub>4</sub> Ce	1.39	0.16	1300	115	-13.44	3.02	0.50	1.74	0.31	9.40	3.20	116	47	IM	1
Al <sub>13</sub> Co <sub>4</sub>	1.39	0.06	1130	354	-13.67	2.26	0.55	1.67	0.11	4.41	2.55	100	44	IM	1

AlMn	1.39	0.03	1226	293	-19.00	0.00	0.69	1.58	0.03	5.00	2.00	98	22	IM	1
AlRe <sub>2</sub>	1.39	0.02	2617	119 1	-8.00	0.47	0.64	1.80	0.14	5.67	1.89	272	139	IM	1
CaCu₅	1.39	0.19	1317	90	-7.22	2.15	0.45	1.75	0.34	9.50	3.35	120	46	IM	2
Al <sub>3</sub> Ru <sub>2</sub>	1.39	0.03	1603	820	-20.16	0.41	0.67	1.85	0.29	5.00	2.45	134	71	IM	1
AlMo	1.40	0.02	1915	981	-5.00	0.00	0.69	1.89	0.28	4.50	1.50	153	77	IM	1
Pt₃Al	1.40	0.01	1764	480	-33.00	4.76	0.56	2.11	0.29	8.25	3.03	192	67	IM	1
Co₃Sn₂	1.40	0.13	1263	619	0.00	0.00	0.67	1.91	0.04	7.00	2.45	131	60	IM	1
Al <sub>9</sub> Co <sub>2</sub>	1.40	0.05	1085	322	-11.31	2.97	0.47	1.66	0.10	4.09	2.31	95	40	IM	1
Al <sub>8</sub> Mn₅	1.40	0.03	1159	285	-17.99	0.49	0.67	1.59	0.03	4.54	1.95	93	21	IM	1
Al₂Ru	1.40	0.03	1491	789	-18.67	1.10	0.64	1.81	0.28	4.67	2.36	124	68	IM	1
AgPt <sub>3</sub>	1.40	0.02	1840	349	-0.75	0.11	0.56	2.19	0.15	10.2 5	0.43	198	56	IM	1
Cd₃Cu₄	1.40	0.10	1031	378	5.88	0.06	0.68	1.81	0.10	11.4	0.49	98	48	IM	1
Al₃V	1.40	0.04	1246	541	-12.00	1.73	0.56	1.62	0.01	3 3.50	0.87	97	36	IM	1
Pt <sub>5</sub> Al <sub>3</sub>	1.40	0.02	1626	536	-41.25	1.33	0.66	2.03	0.32	7.38	3.39	172	75	IM	1
Al₂Mn	1.40	0.03	1129	276	-16.89	1.00	0.64	1.59	0.03	4.33	1.89	91	21	IM	1
Cu <sub>11</sub> In <sub>9</sub>	1.40	0.10	940	462	9.90	0.05	0.69	1.85	0.06	7.40	3.98	92	53	IM	1
Al <sub>45</sub> Cr <sub>7</sub>	1.41	0.04	1101	425	-4.66	1.82	0.40	1.62	0.02	3.40	1.02	87	29	IM	1
AgZn₃	1.41	0.02	828	235	-3.00	0.43	0.56	1.72	0.12	11.7	0.43	78	13	IM	1
AuGa₂	1.41	0.02	648	488	-16.89	1.00	0.64	2.05	0.34	5 5.67	3.77	111	77	IM	1
Al <sub>13</sub> Ru <sub>4</sub>	1.41	0.03	1327	710	-15.11	2.50	0.55	1.75	0.25	4.18	2.12	110	61	IM	1
Al <sub>11</sub> Mn <sub>4</sub>	1.41	0.03	1090	259	-14.86	1.83	0.58	1.59	0.03	4.07	1.77	88	19	IM	1
Ag <sub>2</sub> Ga <sub>3</sub>	1.41	0.02	676	457	-4.80	0.10	0.67	1.86	0.06	6.20	3.92	74	22	IM	1
Al <sub>4</sub> Mn	1.42	0.02	1051	234	-12.16	2.74	0.50	1.60	0.02	3.80	1.60	85	18	IM	1
Ag <sub>3</sub> Sb	1.42	0.04	1152	143	-3.00	0.43	0.56	1.96	0.05	9.50	2.60	86	25	IM	1
Al <sub>17</sub> Sb <sub>3</sub>	1.42	0.03	929	11	1.02	0.35	0.42	1.68	0.16	3.30	0.71	71	12	IM	1
PtAl <sub>2</sub>	1.42	0.02	1303	522	-39.11	2.30	0.64	1.83	0.32	5.33	3.30	127	73	IM	1
Al₅Mn	1.42	0.02	1017	205	-9.31	3.39	0.41	1.60	0.02	3.57	1.40	82	15	IM	1
Mg <sub>50</sub> Ni <sub>50</sub>	1.42	0.12	1326	403	-4.00	0.00	0.69	1.61	0.30	6.00	4.00	113	68	AM	5
Zr <sub>50</sub> Ni <sub>50</sub>	1.42	0.13	1928	200	-49.00	0.00	0.69	1.62	0.29	7.00	3.00	125	55	AM	6
NaZn <sub>13</sub>	1.43	0.08	670	83	1.59	1.14	0.26	1.60	0.19	11.2	2.83	65	16	IM	2
Ag <sub>7</sub> Sb	1.43	0.03	1194	110	-1.75	0.74	0.38	1.95	0.04	1 10.2	1.98	93	19	IM	1
Ag₃Ga	1.43	0.02	1002	404	-3.75	0.54	0.56	1.90	0.05	5 9.00	3.46	89	19	IM	1
CaZn <sub>13</sub>	1.44	0.10	723	109	-5.84	4.16	0.26	1.60	0.17	11.2	2.58	66	14	IM	1
HfW <sub>2</sub>	1.44	0.07	3299	561	-5.33	0.31	0.64	2.01	0.50	9 5.33	0.94	243	94	IM	1
Au <sub>2</sub> Bi	1.44	0.00	1073	374	1.78	0.10	0.64	2.37	0.25	9.00	2.83	157	89	IM	1
MgCu	1.44	0.11	1140	217	-3.00	0.00	0.69	1.61	0.30	6.50	4.50	93	48	AM	7
Al₃Ti	1.44	0.01	1185	436	-22.50	3.25	0.56	1.59	0.03	3.25	0.43	85	15	IM	2
CuZr	1.44	0.01	1743	385	-23.00	0.00	0.69	1.62	0.29	7.50	3.50	105	35	AM	8
Ag <sub>2</sub> Al	1.44	0.00	1134	142	-3.56	0.00	0.64	1.82	0.29	8.33	3.77	92	11	IM	1
Ag <sub>2</sub> Ai AlTi	1.44	0.00	1437	504	-30.00	0.21	0.69	1.58	0.13	3.50	0.50	93	17	IM	1
AgTi <sub>3</sub>	1.45	0.01	1764	306	-1.50	0.00	0.56	1.56	0.04	5.75	3.03	108	4	IM	1
Ag113 Ni₃Sn₄	1.46	0.01	1029	605	-3.92	0.22	0.56	1.94	0.02	6.57	2.97	110	60	IM	1
		0.13			-3.60			2.48	0.02	10.3	2.10			IM	1
Au₃Sn	1.46	U.U4	1254	250	-3.60	1.92	0.33	2.48	0.1/	0	2.10	204	49	IIVI	

		0.07	760	400	2.56	0.04	0.54		0.46	0.67			42		2
MgZn <sub>2</sub>	1.46	0.07	769	109	-3.56	0.21	0.64	1.54	0.16	8.67	4.71	62	12	IM	1
Al₃In	1.46	0.04	808	218	5.25	0.76	0.56	1.65	0.07	3.00	0.00	65	18	IM	1
Ag₅Sn	1.47	0.04	1113	272	-1.67	0.50	0.45	1.94	0.01	9.83	2.61	93	16	IM	
Al₃Zr	1.47	0.05	1232	517	-33.00	4.76	0.56	1.54	0.12	3.25	0.43	75	2	IM	1
Ag <sub>4</sub> Sn	1.48	0.05	1089	292	-1.92	0.43	0.50	1.94	0.01	9.60	2.80	92	17	IM	1
Mg₂Ni	1.48	0.11	1191	379	-3.56	0.21	0.64	1.51	0.28	4.67	3.77	90	64	IM	1
Ag₃Sn	1.49	0.05	1052	316	-2.25	0.32	0.56	1.94	0.01	9.25	3.03	90	18	IM	1
Au <sub>3</sub> In <sub>2</sub>	1.49	0.04	974	445	-10.56	0.22	0.67	2.24	0.37	7.80	3.92	145	91	IM	1
Al <sub>4</sub> Li <sub>9</sub>	1.49	0.03	601	221	-3.41	0.27	0.62	1.17	0.29	1.62	0.92	31	30	IM	1
CuMg <sub>2</sub>	1.49	0.10	1068	205	-2.67	0.16	0.64	1.51	0.28	5.00	4.24	77	45	IM	1
Al₃Yb	1.50	0.08	973	69	-15.00	2.17	0.56	1.48	0.22	3.00	0.00	65	19	IM	1
Al <sub>3</sub> Mg <sub>2</sub>	1.50	0.06	929	5	-1.92	0.04	0.67	1.49	0.15	2.60	0.49	64	15	IM	1
Cd <sub>10</sub> Cu <sub>3</sub>	1.50	0.08	770	322	4.26	0.73	0.54	1.74	0.09	11.7 7	0.42	65	41	IM	1
Al <sub>11</sub> Sm <sub>3</sub>	1.51	0.10	1022	169	-25.59	5.09	0.52	1.52	0.18	3.00	0.00	68	16	IM	1
Al <sub>11</sub> Ce <sub>3</sub>	1.52	0.11	963	56	-25.59	5.09	0.52	1.51	0.20	3.00	0.00	64	22	IM	1
CuEr	1.52	0.16	1564	206	-23.00	0.00	0.69	1.57	0.33	7.00	4.00	92	48	IM	1
Ag₅Cd <sub>8</sub>	1.52	0.04	841	312	-1.89	0.05	0.67	1.78	0.12	11.6 2	0.49	64	28	IM	1
AgZr	1.52	0.05	1681	447	-20.00	0.00	0.69	1.63	0.30	7.50	3.50	85	15	IM	1
CuDy	1.53	0.16	1521	164	-22.00	0.00	0.69	1.56	0.34	7.00	4.00	91	50	IM	1
Al <sub>3</sub> Zr <sub>4</sub>	1.53	0.06	1616	591	-43.10	0.44	0.68	1.45	0.14	3.57	0.49	73	3	IM	2
AuSn	1.53	0.06	921	416	-10.00	0.00	0.69	2.25	0.29	7.50	3.50	139	81	IM	1
Al <sub>12</sub> Mg <sub>17</sub>	1.53	0.05	927	5	-1.94	0.03	0.68	1.43	0.15	2.41	0.49	58	15	IM	1
ZrTi	1.53	0.05	2035	94	0.00	0.00	0.69	1.44	0.11	4.00	0.00	90	20	AM	6
$Bi_2Mg_3$	1.53	0.05	772	185	-9.60	0.20	0.67	1.59	0.35	3.20	1.47	39	7	IM	1
Zr <sub>70</sub> Pd <sub>30</sub>	1.53	0.07	2038	137	-76.44	6.67	0.61	1.59	0.40	5.80	2.75	104	50	AM	9
Al <sub>2</sub> Zr <sub>3</sub>	1.53	0.05	1650	585	-42.24	0.86	0.67	1.44	0.14	3.60	0.49	73	3	IM	2
AlNd	1.54	0.07	1114	180	-38.00	0.00	0.69	1.38	0.24	3.00	0.00	54	22	IM	1
Al <sub>4</sub> Ca	1.54	0.14	970	73	-12.80	2.88	0.50	1.49	0.24	2.80	0.40	64	24	IM	1
Au₂Pb	1.54	0.09	1092	347	1.78	0.10	0.64	2.47	0.10	8.67	3.30	162	82	IM	1
Al₂Sm	1.56	0.11	1071	194	-33.78	1.99	0.64	1.46	0.21	3.00	0.00	63	18	IM	1
AuSn <sub>2</sub>	1.56	0.05	783	392	-8.89	0.52	0.64	2.15	0.27	6.33	3.30	112	76	IM	1
AgMg <sub>3</sub>	1.56	0.04	1001	135	-7.50	1.08	0.56	1.47	0.27	4.25	3.90	59	24	IM	1
Al₂Ce	1.56	0.12	979	65	-33.78	1.99	0.64	1.45	0.23	3.00	0.00	58	25	IM	1
SbY	1.57	0.15	1351	448	-68.00	0.00	0.69	1.64	0.42	4.00	1.00	42	1	IM	1
Mg <sub>6</sub> Pd	1.57	0.05	1052	317	-19.59	7.14	0.41	1.44	0.31	3.14	2.80	64	47	IM	1
Cd₃Mg	1.58	0.01	676	142	-4.50	0.65	0.56	1.60	0.16	9.50	4.33	43	1	IM	1
Al₂La	1.58	0.13	1020	122	-33.78	1.99	0.64	1.44	0.24	3.00	0.00	60	23	IM	1
Dy <sub>4</sub> Sb <sub>3</sub>	1.58	0.14	1350	387	-65.63	0.68	0.68	1.58	0.41	3.86	0.99	41	0	IM	1
AuSn <sub>4</sub>	1.58	0.04	672	333	-6.40	1.44	0.50	2.08	0.23	5.40	2.80	90	65	IM	1
CdMg	1.58	0.01	759	164	-6.00	0.00	0.69	1.50	0.19	7.00	5.00	44	2	IM	1
CdMg₃	1.59	0.01	841	142	-4.50	0.65	0.56	1.41	0.16	4.50	4.33	44	1	IM	1
Sb <sub>3</sub> Y <sub>4</sub>	1.60	0.15	1415	443	-66.61	0.69	0.68	1.58	0.41	3.86	0.99	41	0	IM	1
Dy₅Sb₃	1.61	0.13	1392	378	-62.81	2.03	0.66	1.53	0.40	3.75	0.97	41	0	IM	1

CdSn <sub>10</sub>	1.62	0.01	513	26	0.00	0.00	0.30	1.94	0.08	4.73	2.30	57	5	IM	1
Sb <sub>3</sub> Y <sub>5</sub>	1.63	0.14	1463	433	-63.75	2.06	0.66	1.53	0.40	3.75	0.97	41	0	IM	1
AlCe <sub>1</sub>	1.63	0.12	1002	69	-38.00	0.00	0.69	1.37	0.25	3.00	0.00	49	27	IM	1
AuPb <sub>2</sub>	1.65	0.09	846	347	1.78	0.10	0.64	2.40	0.10	6.33	3.30	104	82	IM	1
AlEr <sub>2</sub>	1.65	0.09	1491	394	-33.78	1.99	0.64	1.36	0.17	3.00	0.00	55	15	IM	1
Mg <sub>3</sub> Sm <sub>1</sub>	1.65	0.05	1029	183	-4.50	0.65	0.56	1.28	0.06	2.25	0.43	43	3	IM	1
Bi <sub>3</sub> Pb <sub>7</sub>	1.65	0.09	584	26	0.00	0.00	0.61	2.24	0.14	4.30	0.46	42	7	IM	1
AlLa	1.66	0.14	1063	130	-38.00	0.00	0.69	1.36	0.26	3.00	0.00	52	24	IM	1
Mg <sub>17</sub> Sr <sub>2</sub>	1.66	0.10	936	39	-1.51	0.77	0.34	1.27	0.11	2.00	0.00	42	10	IM	1
Mg <sub>2</sub> Sm <sub>1</sub>	1.67	0.06	1064	199	-5.33	0.31	0.64	1.26	0.07	2.33	0.47	43	3	IM	1
AuPb <sub>3</sub>	1.67	0.08	785	319	1.50	0.22	0.56	2.38	0.09	5.75	3.03	90	75	IM	1
Al <sub>3</sub> Ca <sub>8</sub>	1.83	0.13	1065	81	-15.87	1.84	0.59	1.17	0.27	2.27	0.45	33	26	IM	1
						Ternary All	oys								
B <sub>6</sub> Co <sub>2</sub> Nb <sub>2</sub>	1.03	0.25	2312	314	-41.44	8.14	0.95	1.92	0.17	4.60	2.33	262	71	IM	1
B₂NiTa	1.08	0.25	2429	558	-46.25	9.38	1.04	1.87	0.22	5.25	2.86	255	65	IM	1
B <sub>2</sub> CoNb	1.08	0.25	2304	350	-45.25	9.57	1.04	1.89	0.18	5.00	2.45	248	73	IM	1
B <sub>4</sub> Fe <sub>4</sub> Nd	1.10	0.25	1992	354	-30.02	8.28	0.97	1.85	0.27	5.22	2.48	221	97	IM	1
B <sub>2</sub> Mo <sub>2</sub> Ni	1.12	0.22	2443	434	-31.68	7.37	1.05	2.06	0.09	5.60	2.58	256	55	IM	1
B <sub>2</sub> CoMo <sub>2</sub>	1.12	0.22	2451	420	-31.04	7.72	1.05	2.06	0.10	5.40	2.25	256	55	IM	1
B <sub>2</sub> CoW <sub>2</sub>	1.13	0.22	2771	784	-27.84	7.77	1.05	2.14	0.19	5.40	2.25	288	54	IM	2
B <sub>6</sub> CaNi <sub>11</sub>	1.14	0.25	1901	345	-22.14	2.91	0.83	1.90	0.23	7.22	3.49	218	81	IM	1
ВСоМо	1.14	0.20	2337	461	-28.00	8.03	1.10	2.03	0.11	6.00	2.45	243	58	IM	1
B <sub>3</sub> FeNd <sub>2</sub>	1.16	0.32	1907	473	-41.11	11.31	1.01	1.71	0.41	3.83	1.86	199	129	IM	1
B <sub>6</sub> Ni <sub>21</sub> Sb <sub>2</sub>	1.16	0.15	1799	348	-13.27	6.60	0.74	1.95	0.06	8.21	2.94	199	71	IM	1
B <sub>6</sub> Mn <sub>2</sub> Ni <sub>21</sub>	1.17	0.15	1842	264	-17.81	3.66	0.74	1.91	0.11	8.34	2.83	205	61	IM	1
B <sub>2</sub> Co <sub>3</sub> Zr	1.17	0.24	2021	264	-45.44	10.70	1.01	1.84	0.24	6.17	2.85	208	88	IM	1
B <sub>6</sub> Co <sub>21</sub> V <sub>2</sub>	1.17	0.15	1917	244	-19.58	3.41	0.74	1.90	0.10	7.48	2.50	208	58	IM	1
B <sub>6</sub> Co <sub>21</sub> Sb <sub>2</sub>	1.17	0.15	1828	343	-12.67	6.94	0.74	1.92	0.07	7.48	2.50	199	71	IM	1
B <sub>6</sub> Ni <sub>21</sub> Ta <sub>2</sub>	1.17	0.16	1964	438	-23.26	3.90	0.74	1.91	0.12	8.21	2.94	210	56	IM	1
Al <sub>2</sub> B <sub>6</sub> Co <sub>20</sub>	1.17	0.16	1833	343	-18.57	3.13	0.76	1.90	0.10	7.29	2.71	203	67	IM	1
B <sub>4</sub> InNi <sub>15</sub>	1.18	0.16	1787	397	-13.38	5.97	0.69	1.93	0.06	8.25	3.03	201	68	IM	1
AlB <sub>2</sub> Ni <sub>7</sub>	1.18	0.16	1773	372	-19.60	3.29	0.80	1.91	0.11	7.90	3.21	198	68	IM	1
B <sub>6</sub> Ni <sub>20</sub> Ti <sub>3</sub>	1.18	0.17	1878	248	-28.65	4.94	0.82	1.90	0.13	7.93	3.10	202	64	IM	1
B <sub>6</sub> Hf <sub>2</sub> Ni <sub>21</sub>	1.18	0.17	1910	297	-26.54	5.93	0.74	1.89	0.17	8.14	3.03	204	62	IM	1
B <sub>6</sub> Ni <sub>21</sub> Zr <sub>2</sub>	1.18	0.17	1884	257	-28.22	7.10	0.74	1.90	0.16	8.14	3.03	201	66	IM	1
B <sub>6</sub> Ni <sub>21</sub> Sn <sub>2</sub>	1.18	0.18	1772	425	-14.15	5.87	0.74	1.94	0.05	8.14	3.03	201	68	IM	1
B <sub>6</sub> Co <sub>20</sub> In <sub>3</sub>	1.19	0.18	1750	505	-10.16	8.08	0.82	1.90	0.08	7.14	2.78	194	78	IM	1
B₂MgNi <sub>7</sub>	1.20	0.18	1772	374	-14.88	4.72	0.80	1.88	0.20	7.80	3.37	195	74	IM	1
AlBe₄Mn	1.22	0.10	1449	231	-6.56	3.22	0.87	1.57	0.02	3.00	1.83	119	20	IM	1
Fe <sub>89</sub> Zr <sub>5</sub> B <sub>6</sub>	1.23	0.11	1859	141	-10.86	5.66	0.42	1.82	0.12	7.50	1.43	174	43	SS	10
Fe <sub>89</sub> Zr <sub>7</sub> B <sub>4</sub>	1.25	0.10	1855	129	-10.73	5.58	0.42	1.80	0.14	7.52	1.37	169	40	SS	10
Fe <sub>91</sub> Hf <sub>7</sub> B <sub>2</sub>	1.26	0.08	1870	190	-7.61	4.73	0.35	1.80	0.14	7.62	1.21	169	26	SS	10
FeCoNi	1.25	0.00	1769	34	-1.33	0.51	1.10	1.87	0.03	9.00	0.82	177	5	SS	11
-	•														

DE 111	4.00	0.40	4700	240			0.50	4.76	0.00	7.40		452		l	2
BFe <sub>14</sub> Nd <sub>2</sub>	1.26	0.13	1782	218	-6.01	6.08	0.58	1.76	0.23	7.12	1.91	163	59	IM	1
Cr <sub>6</sub> Fe <sub>18</sub> Mo <sub>5</sub>	1.26	0.04	2074	402	-1.37	0.36	0.93	1.85	0.16	7.24	0.97	178	24	IM	1
BIn₂Ni <sub>7</sub>	1.27	0.15	1530	580	-4.16	6.53	0.80	1.90	0.07	7.90	3.21	165	78	IM	
Co <sub>5</sub> Cr <sub>2</sub> Mo <sub>3</sub>	1.28	0.04	2189	488	-4.60	1.15	1.03	1.92	0.18	7.50	1.50	191	27	IM	2
AlNi <sub>6</sub> Ta	1.29	0.06	1824	612	-20.31	2.71	0.74	1.82	0.16	8.50	2.65	170	36	IM	1
Sm <sub>2</sub> Fe <sub>17</sub> Ni <sub>3</sub>	1.29	0.13	1757	133	-2.66	3.19	0.69	1.78	0.20	7.82	1.67	159	39	IM	2
Cr <sub>9</sub> Mo <sub>21</sub> Ni <sub>20</sub>	1.30	0.04	2300	532	-6.72	1.85	1.04	1.97	0.18	7.60	1.96	197	29	IM	2
BCaNi <sub>4</sub>	1.30	0.26	1729	356	-16.22	4.14	0.87	1.78	0.35	7.50	3.55	176	88	IM	1
AlMnSi	1.31	0.09	1380	323	-36.89	8.86	1.10	1.69	0.15	4.67	1.70	99	18	IM	2
Cu <sub>16</sub> Mg <sub>6</sub> Si <sub>7</sub>	1.31	0.12	1347	255	-16.68	5.14	1.00	1.78	0.24	7.45	4.00	111	37	IM	1
Cu₃MgSi	1.32	0.11	1337	243	-14.72	4.88	0.95	1.78	0.24	7.80	3.97	113	37	IM	1
CuNiTi	1.33	0.07	1676	241	-17.78	9.71	1.10	1.78	0.17	8.33	3.09	143	29	IM	1
Cu₂GeLi	1.33	0.08	1095	375	-16.88	6.38	1.04	1.70	0.42	6.75	4.38	73	67	IM	1
Pd <sub>77</sub> Cu <sub>6</sub> Si <sub>17</sub>	1.33	0.06	1776	118	-32.16	9.24	0.67	2.13	0.13	9.04	2.29	164	30	AM	3
Pd <sub>77.5</sub> Cu <sub>6</sub> Si <sub>16.5</sub>	1.33	0.06	1777	118	-31.49	9.30	0.66	2.13	0.13	9.07	2.27	164	30	AM	3
AlCu₂Mn	1.33	0.05	1292	217	-3.25	4.77	1.04	1.74	0.16	8.00	3.32	119	26	IM	2
Al <sub>5</sub> Hf <sub>4</sub> Ni <sub>16</sub>	1.34	0.10	1694	471	-33.46	5.03	0.90	1.75	0.23	7.64	3.16	148	44	IM	1
AlBeTi	1.34	0.11	1478	415	-26.67	9.03	1.10	1.57	0.03	3.00	0.82	105	22	IM	1
AlFe₂Ti	1.34	0.08	1624	402	-21.50	4.56	1.04	1.70	0.13	5.75	2.28	132	40	IM	1
Al <sub>13</sub> Cr <sub>4</sub> Si <sub>4</sub>	1.34	0.09	1314	509	-19.05	4.62	0.93	1.67	0.11	3.76	1.15	97	32	IM	1
AlNi₂Ti	1.35	0.08	1583	385	-36.00	5.18	1.04	1.74	0.17	6.75	3.27	137	45	IM	1
Al <sub>31</sub> Cu <sub>16</sub> Ni <sub>14</sub>	1.35	0.06	1227	325	-9.83	6.26	1.03	1.75	0.15	6.70	3.78	117	44	IM	1
Mg₂Ni <sub>9</sub> Y	1.35	0.14	1600	303	-10.08	5.67	0.72	1.75	0.27	8.08	3.33	146	59	IM	1
Al <sub>3</sub> Nb <sub>10</sub> Ni <sub>9</sub>	1.35	0.07	2084	659	-31.69	4.17	1.00	1.73	0.15	6.77	2.76	161	34	IM	2
Al <sub>9</sub> Mn <sub>4</sub> Si <sub>3</sub>	1.36	0.08	1221	331	-27.14	5.59	0.98	1.65	0.12	4.19	1.67	92	19	IM	1
AlCu₂Ti	1.36	0.06	1398	358	-12.50	6.10	1.04	1.74	0.16	7.25	3.77	117	26	IM	1
CuTiZn	1.38	0.06	1330	510	-10.22	4.09	1.10	1.70	0.15	9.00	3.56	107	29	IM	1
AlCoCu	1.38	0.05	1102	278	-5.40	4.27	0.80	1.70	0.13	5.20	3.40	99	37	IM	1
Ni <sub>57.5</sub> Zr <sub>35</sub> Al <sub>7.5</sub>	1.38	0.12	1808	311	-47.86	5.43	0.88	1.68	0.27	7.38	3.06	134	54	AM	12
Cu <sub>4</sub> MgSn	1.39	0.11	1143	327	0.78	2.92	0.87	1.81	0.23	8.33	3.82	111	42	IM	1
CuGeLi <sub>2</sub>	1.39	0.09	869	419	-22.63	8.01	1.04	1.47	0.49	4.25	4.09	41	58	IM	1
Al <sub>2</sub> Li <sub>3</sub> Si <sub>2</sub>	1.39	0.11	943	511	6.53	11.59	1.08	1.42	0.40	2.43	1.29	55	39	IM	1
Al₂FeTi	1.39	0.06	1405	474	-24.75	5.55	1.04	1.65	0.11	4.50	2.06	108	38	IM	1
Al <sub>11</sub> Cu <sub>11</sub> Mg <sub>4</sub>	1.39	0.08	1111	211	-2.02	0.50	1.02	1.69	0.21	6.23	4.10	98	37	IM	1
Cu <sub>60</sub> Zr <sub>30</sub> Ti <sub>10</sub>	1.39	0.11	1647	358	-18.72	4.41	0.90	1.69	0.26	8.20	3.43	116	31	AM	3
MgNi <sub>4</sub> Y	1.40	0.16	1606	306	-16.22	6.62	0.87	1.70	0.31	7.50	3.55	134	65	IM	1
CuMgSb	1.40	0.10	1062	210	-5.33	5.49	1.10	1.75	0.32	6.00	3.74	76	46	IM	1
Al₅CoMn	1.40	0.04	1111	314	-14.56	2.26	0.74	1.64	0.09	4.25	2.22	95	35	IM	1
Cu <sub>60.3</sub> Zr <sub>37.2</sub> Al <sub>2.5</sub>	1.40	0.11	1634	386	-22.33	3.37	0.77	1.68	0.27	8.20	3.46	113	34	AM	13
Cu <sub>58.7</sub> Zr <sub>36.3</sub> Al <sub>3.5</sub>	1.40	0.11	1627	391	-22.59	3.99	0.79	1.68	0.27	8.14	3.48	112	34	AM	13
Cu <sub>59.6</sub> Zr <sub>36.9</sub> Al <sub>3.5</sub>	1.40	0.11	1627	391	-22.59	3.96	0.79	1.68	0.27	8.14	3.48	112	34	AM	13
Cu <sub>54</sub> Zr <sub>42.5</sub> Al <sub>3.5</sub>	1.42	0.11	1670	401	-23.81	4.01	0.81	1.65	0.28	7.75	3.53	108	34	AM	13
Cu <sub>53.2</sub> Zr <sub>41.8</sub> Al <sub>5</sub>	1.42	0.11	1659	408	-24.24	4.78	0.85	1.65	0.28	7.67	3.55	108	34	AM	13
	L														

C: 7: Al	1.40	0.11	4600	404	22.42	F 4.4	0.05	4.60	0.27	0.04	2.52	111	24		13
Cu <sub>58.1</sub> Zr <sub>35.9</sub> Al <sub>6</sub>	1.40	0.11	1609	401	-23.12	5.14	0.85	1.68	0.27	8.01	3.53	111	34	AM	13
Cu <sub>51.5</sub> Zr <sub>40.5</sub> Al <sub>8</sub>	1.42	0.11	1636	421	-25.06	6.03	0.91	1.65	0.27	7.53	3.59	107	34	AM	1
Al <sub>21</sub> Cu <sub>2</sub> Mn <sub>3</sub>	1.41	0.03	1034	208	-7.19	4.06	0.62	1.63	0.08	4.08	2.37	86	21	IM	1
Al <sub>16</sub> Ru <sub>8</sub> Ti <sub>6</sub>	1.41	0.03	1581	728	-33.92	5.46	1.01	1.75	0.27	4.53	2.13	121	61	IM	
Ni <sub>45</sub> Ti <sub>20</sub> Zr <sub>35</sub>	1.41	0.11	1911	178	-43.47	11.98	1.05	1.63	0.26	6.70	2.98	128	49	AM	14
Cu <sub>50</sub> Zr <sub>45</sub> Al <sub>5</sub>	1.43	0.11	1683	412	-24.76	4.81	0.86	1.63	0.28	7.45	3.56	106	34	AM	15
Cu <sub>52.5</sub> Zr <sub>42.5</sub> Al <sub>5</sub>	1.42	0.11	1664	409	-24.37	4.79	0.85	1.64	0.28	7.63	3.55	107	34	AM	15
$Cu_{55}Zr_{40}Al_5$	1.42	0.11	1645	405	-23.87	4.76	0.85	1.66	0.27	7.80	3.54	109	34	AM	15
Al <sub>5</sub> CuTi <sub>2</sub>	1.42	0.04	1238	428	-20.19	6.91	0.90	1.63	0.11	4.25	2.59	93	23	IM	1
Al <sub>22</sub> Fe <sub>3</sub> Ti <sub>8</sub>	1.42	0.04	1258	459	-23.56	4.15	0.83	1.61	0.07	3.70	1.42	93	28	IM	1
Al <sub>2</sub> CaSi <sub>2</sub>	1.43	0.21	1271	346	-34.88	8.88	1.05	1.60	0.33	3.20	0.75	74	30	IM	1
Al <sub>85.8</sub> Ni <sub>9.1</sub> Y <sub>5.1</sub>	1.43	0.07	1050	287	-14.10	5.59	0.50	1.62	0.13	3.64	2.01	84	31	AM	15
Al <sub>85.5</sub> Fe <sub>9</sub> Ce <sub>5.5</sub>	1.44	0.08	1020	251	-10.47	6.05	0.51	1.60	0.13	3.45	1.43	81	30	AM	15
Al <sub>85.8</sub> Co <sub>9.1</sub> Y <sub>5.1</sub>	1.43	0.07	1054	295	-12.99	5.53	0.50	1.61	0.12	3.55	1.73	84	31	AM	15
Cu <sub>50</sub> Zr <sub>47</sub> Al <sub>3</sub>	1.44	0.11	1707	403	-24.16	3.73	0.81	1.62	0.28	7.47	3.53	106	34	AM	15
Al <sub>2</sub> CuMg	1.44	0.08	1037	185	-2.25	0.49	1.04	1.61	0.21	4.75	3.63	84	35	IM	1
BiCuMg	1.44	0.09	942	332	0.89	6.08	1.10	1.74	0.31	6.00	3.74	72	48	IM	1
AlCuMg	1.44	0.09	1071	203	-2.67	0.61	1.10	1.61	0.24	5.33	4.03	87	40	IM	1
Al <sub>18</sub> Cr <sub>2</sub> Mg <sub>3</sub>	1.44	0.06	1041	352	-2.45	3.44	0.67	1.58	0.10	3.13	0.95	79	27	IM	1
Ca <sub>7</sub> Mg <sub>6</sub> Si <sub>14</sub>	1.47	0.24	1369	337	-40.79	10.44	1.02	1.54	0.39	3.04	1.00	66	36	IM	1
Al <sub>7</sub> Cu <sub>3</sub> Mg <sub>6</sub>	1.47	0.08	1009	168	-2.48	0.49	1.04	1.55	0.21	4.13	3.33	76	34	IM	1
Cu₂In₃Sn₁	1.48	0.10	752	429	8.22	2.50	1.01	1.85	0.07	5.83	3.67	73	48	IM	1
Al <sub>6</sub> CuMg <sub>4</sub>	1.48	0.07	968	123	-2.18	0.31	0.92	1.53	0.18	3.36	2.46	71	26	IM	1
Al <sub>8</sub> Li <sub>5</sub> Mg <sub>2</sub>	1.48	0.04	772	225	-3.41	0.85	0.97	1.36	0.29	2.20	0.91	50	30	IM	1
Mg <sub>32</sub> Al <sub>24.5</sub> Zn <sub>24.5</sub>	1.49	0.06	857	108	-2.50	1.19	1.09	1.50	0.16	5.33	4.41	62	14	IM	2
AuNi₂Sn₄	1.49	0.11	973	554	-4.73	2.82	0.96	2.03	0.21	6.71	3.15	116	68	IM	1
Zr <sub>66</sub> Al <sub>8</sub> Ni <sub>26</sub>	1.50	0.10	1928	340	-44.76	3.73	0.83	1.50	0.25	5.48	2.69	100	48	AM	3
CaAl₂Zn₂	1.53	0.15	873	162	-12.80	6.43	1.05	1.50	0.25	6.40	4.59	62	23	IM	1
Al <sub>4</sub> In <sub>3</sub> Sn <sub>3</sub>	1.53	0.05	654	230	5.28	1.75	1.09	1.77	0.15	3.30	0.46	58	18	IM	1
Mg <sub>65</sub> Ni <sub>20</sub> Nd <sub>15</sub>	1.54	0.09	1140	321	-8.02	4.12	0.89	1.40	0.26	3.75	3.14	70	55	AM	3
Mg <sub>65</sub> Cu <sub>25</sub> Gd <sub>10</sub>	1.54	0.11	1098	246	-5.71	2.80	0.86	1.45	0.26	4.35	3.85	68	42	AM	16
Mg <sub>65</sub> Cu <sub>25</sub> Y <sub>10</sub>	1.54	0.11	1119	292	-5.71	2.80	0.86	1.45	0.26	4.35	3.85	68	41	AM	3
AuCdSn	1.54	0.05	812	373	-9.33	3.17	1.10	2.06	0.35	9.00	3.56	107	80	IM	1
Mg75Ni15Nd10	1.55	0.08	1081	293	-5.40	3.05	0.73	1.38	0.23	3.30	2.83	64	49	AM	3
Cd₅Li₄Mg	1.55	0.02	571	135	-11.60	2.71	0.94	1.37	0.34	6.60	5.41	30	15	IM	1
Mg <sub>70</sub> Ni <sub>15</sub> Nd <sub>15</sub>	1.55	0.08	1099	295	-6.90	3.60	0.82	1.37	0.23	3.35	2.82	63	49	AM	3
Mg <sub>80</sub> Ni <sub>10</sub> Nd <sub>10</sub>	1.57	0.07	1041	254	-4.40	2.60	0.64	1.35	0.19	2.90	2.39	57	41	AM	3
CaAlZn	1.60	0.17	914	173	-18.22	6.56	1.10	1.42	0.30	5.67	4.50	54	27	IM	1
Gd <sub>56</sub> Al <sub>24</sub> Co <sub>20</sub>	1.60	0.14	1466	307	-34.47	5.63	0.99	1.43	0.28	4.20	2.40	76	55	AM	17
Bi <sub>2</sub> CaMg <sub>2</sub>	1.61	0.14	810	228	-26.24	12.08	1.05	1.53	0.28	3.20	1.47	34	10	IM	1
Ca <sub>2</sub> Mg <sub>6</sub> Zn <sub>3</sub>	1.61	0.12	895	143	-9.12	3.62	0.99	1.35	0.41	4.73	4.45	47	18	IM	1
Ca2IVIB6Z113 La55Al25Ni20	1.64	0.12	1235	269	-37.18	4.80	1.00	1.39	0.22	4.40	2.80	70	58	AM	3
														AM	3
La <sub>55</sub> Al <sub>25</sub> Cu <sub>20</sub>	1.65	0.16	1161	146	-30.34	7.79	1.00	1.39	0.33	4.60	3.20	62	44	AIVI	

														1	
CdIn₃Na₂	1.66	0.08	438	75	-4.00	1.25	1.01	1.48	0.39	3.83	3.76	26	14	IM	1
La <sub>66</sub> AI <sub>14</sub> Cu <sub>20</sub>	1.70	0.15	1190	122	-25.24	5.82	0.87	1.33	0.33	4.60	3.20	57	45	AM	3
Ca <sub>6.23</sub> Mg <sub>3.78</sub> Sn <sub>7</sub>	1.75	0.10	821	274	-32.38	11.43	1.07	1.46	0.43	2.82	0.98	40	18	IM	1
Ca <sub>65</sub> Mg <sub>15</sub> Zn <sub>20</sub>	1.80	0.13	1002	168	-14.26	4.20	0.89	1.18	0.26	4.00	4.00	32	21	AM	18
						Quaternary A	Alloys								
CoFeSiB	1.12	0.16	1904	260	-34.50	10.42	1.39	1.91	0.08	6.00	2.55	193	80	AM	19
Co <sub>43</sub> Fe <sub>20</sub> Ta <sub>5.5</sub> B <sub>31.5</sub>	1.12	0.19	2043	398	-26.57	8.47	1.21	1.90	0.13	6.69	2.66	223	66	AM	20
$Co_{63}Fe_9Zr_8B_{20}$	1.19	0.18	1917	236	-27.72	9.01	1.03	1.86	0.17	7.31	2.54	198	67	AM	21
$Cr_{55}Co_{24}Nb_7B_{14}$	1.20	0.13	2145	257	-19.76	7.83	1.13	1.76	0.15	6.23	1.85	188	54	AM	22
$Cr_{50}Co_{29}Nb_7B_{14}$	1.20	0.13	2124	270	-20.02	8.00	1.17	1.77	0.15	6.38	1.95	189	54	AM	22
Cr <sub>45</sub> Co <sub>34</sub> Nb <sub>7</sub> B <sub>14</sub>	1.20	0.13	2103	280	-20.21	8.09	1.19	1.78	0.15	6.53	2.03	190	53	AM	22
CoCrFeNi	1.25	0.00	1872	180	-3.75	1.64	1.39	1.82	0.10	8.25	1.48	173	8	SS	23
CoCr₂FeNi	1.25	0.00	1933	203	-4.32	1.69	1.33	1.79	0.11	7.80	1.60	170	9	SS	24
CuNiCoFe	1.25	0.01	1666	180	5.00	3.32	1.39	1.88	0.03	9.50	1.12	168	16	SS	25
CoCrMnNi	1.27	0.03	1799	240	-5.50	2.47	1.39	1.75	0.15	8.00	1.58	160	24	SS	26
SmFe <sub>6</sub> Ti <sub>6</sub> N	1.34	0.17	1709	480	-48.82	33.99	1.10	1.75	0.41	5.71	2.02	123	51	IM	2
CoFeReRu	1.30	0.04	2411	691	-1.50	1.31	1.39	1.95	0.15	8.00	0.71	235	80	SS	27
Au <sub>52</sub> Pd <sub>2.3</sub> Cu <sub>29.2</sub> Si <sub>16.5</sub>	1.34	0.08	1412	142	-20.63	6.17	1.08	2.24	0.32	9.82	2.59	176	48	AM	28
$Au_{46}Ag_5Cu_{29}Si_{20}$	1.34	0.09	1408	142	-21.49	6.43	1.19	2.20	0.32	9.60	2.80	167	51	AM	28
AlCoCuNi	1.30	0.06	1447	337	-8.00	6.94	1.39	1.83	0.12	8.25	3.11	144	43	SS	29
$Ni_{60}Nb_{20}Hf_5Ti_{15}$	1.33	0.08	2003	413	-31.64	7.66	1.06	1.76	0.19	7.80	2.71	164	27	AM	30
$Ni_{60}Nb_{15}Hf_5Ti_{20}$	1.33	0.08	1963	375	-32.28	7.73	1.06	1.76	0.19	7.75	2.77	161	30	AM	30
$Ni_{60}Nb_{10}Hf_5Ti_{25}$	1.33	0.08	1922	329	-32.96	7.39	1.03	1.76	0.20	7.70	2.83	158	32	AM	30
$Ni_{60}Nb_{20}Hf_{10}Ti_{10}$	1.34	0.09	2032	426	-32.40	8.20	1.09	1.75	0.21	7.80	2.71	164	27	AM	30
$Ni_{50}Nb_{20}Hf_{2.5}Ti_{17.5}$	1.34	0.08	2018	417	-32.09	8.17	1.08	1.75	0.18	7.56	2.75	162	28	AM	30
$Ni_{60}Nb_{15}Hf_{10}Ti_{15}$	1.34	0.09	1991	393	-33.06	8.40	1.11	1.75	0.21	7.75	2.77	161	30	AM	30
$Ni_{55}Nb_{20}Hf_5Ti_{20}$	1.34	0.08	2014	408	-32.74	8.73	1.12	1.74	0.19	7.50	2.78	161	29	AM	30
$Ni_{60}Nb_{20}Hf_{15}Ti_{5}$	1.34	0.09	2060	438	-33.16	8.39	1.06	1.74	0.23	7.80	2.71	164	27	AM	30
$Ni_{55}Nb_{20}Hf_{10}Ti_{15}$	1.35	0.09	2042	421	-33.43	9.38	1.17	1.73	0.21	7.50	2.78	161	29	AM	30
$Ni_{50}Nb_{20}Hf_5Ti_{25}$	1.35	0.08	2025	403	-33.14	9.63	1.16	1.73	0.19	7.20	2.82	157	31	AM	30
$Ni_{50}Nb_{20}Hf_{10}Ti_{20}$	1.36	0.09	2053	416	-33.76	10.36	1.22	1.71	0.21	7.20	2.82	157	31	AM	30
$Ni_{57}Zr_{20}Ti_{13}Pd_{10}$	1.36	0.11	1846	158	-43.38	14.71	1.14	1.77	0.27	8.02	2.82	149	45	AM	31
$Ni_{57}Zr_{20}Ti_{16}Pd_{7}$	1.36	0.11	1849	159	-43.12	13.46	1.12	1.76	0.27	7.84	2.88	147	46	AM	31
$Ni_{57}Zr_{20}Ti_{18}Pd_5$	1.36	0.11	1851	160	-42.69	12.49	1.10	1.74	0.26	7.72	2.91	146	46	AM	31
Ni <sub>62</sub> Zr <sub>28</sub> Nb <sub>7</sub> Al <sub>3</sub>	1.36	0.12	1888	334	-42.19	8.07	0.94	1.72	0.26	7.76	2.88	146	50	AM	12
Ni <sub>61</sub> Zr <sub>27</sub> Nb <sub>8</sub> Al <sub>4</sub>	1.36	0.11	1886	356	-42.07	8.52	0.99	1.72	0.25	7.70	2.90	146	50	AM	12
$Ni_{61}Zr_{27}Nb_7Al_5$	1.36	0.11	1868	358	-42.41	8.32	0.99	1.72	0.25	7.68	2.92	145	50	AM	12
$Ni_{57.5}Zr_{24}Nb_{11}Al_{7.5}$	1.37	0.11	1877	422	-41.77	9.64	1.10	1.71	0.24	7.49	2.96	145	50	AM	12
$Ni_{60}Zr_{27}Nb_8Al_5$	1.37	0.11	1878	369	-42.47	8.72	1.01	1.71	0.25	7.63	2.92	145	50	AM	12
Cu <sub>54</sub> Zr <sub>27</sub> Ti <sub>9</sub> Be <sub>10</sub>	1.37	0.12	1638	341	-20.89	7.46	1.13	1.68	0.25	7.58	3.75	118	30	AM	3
Ni <sub>60</sub> Zr <sub>28</sub> Nb <sub>7</sub> Al <sub>5</sub>	1.37	0.12	1872	359	-43.01	8.48	1.00	1.71	0.26	7.62	2.94	144	51	AM	12
Ni <sub>57.5</sub> Zr <sub>26</sub> Nb <sub>9</sub> Al <sub>7.5</sub>	1.37	0.11	1864	405	-42.85	9.41	1.08	1.71	0.25	7.47	2.98	143	50	AM	12
Ni <sub>57.5</sub> Zr <sub>28</sub> Nb <sub>7</sub> Al <sub>7.5</sub>	1.37	0.11	1852	387	-43.94	9.02	1.06	1.70	0.25	7.45	3.00	141	51	AM	12

12
12
32
32
33
33
34
14
14
35
14
36
37
38
38
39
40
41
38
42
43
44
44
44
45
46
47
48
18
49
50
18
8
8
8
17
17
17
17
51
52
52
52

Ce <sub>65</sub> Al <sub>12.5</sub> Ni <sub>12.5</sub> Cu <sub>10</sub>	1.65	0.15	1165	236	-28.14	5.82	1.03	1.36	0.33	4.68	3.12	60	58	AM	52
La <sub>55</sub> Al <sub>25</sub> Ni <sub>15</sub> Cu <sub>5</sub>	1.64	0.16	1217	246	-35.35	6.74	1.11	1.39	0.33	4.45	2.91	68	55	AM	53
La <sub>55</sub> Al <sub>25</sub> Ni <sub>10</sub> Cu <sub>10</sub>	1.64	0.16	1198	219	-33.60	7.61	1.14	1.39	0.33	4.50	3.01	66	52	AM	53
La <sub>55</sub> Al <sub>25</sub> Ni <sub>5</sub> Cu <sub>15</sub>	1.65	0.16	1180	187	-31.93	7.90	1.11	1.39	0.33	4.55	3.11	64	48	AM	53
$Ce_{68}AI_{10}Fe_2Cu_{20}$	1.66	0.14	1129	161	-21.56	6.33	0.89	1.34	0.33	4.70	3.23	54	50	AM	54
Sr <sub>36</sub> Al <sub>24</sub> Co <sub>20</sub> Y <sub>20</sub>	1.73	0.21	1315	385	-12.91	11.82	1.35	1.35	0.37	3.84	2.62	67	62	AM	55
Sr <sub>40</sub> Al <sub>20</sub> Co <sub>20</sub> Y <sub>20</sub>	1.76	0.21	1320	381	-9.76	11.63	1.33	1.32	0.37	3.80	2.64	64	63	AM	55
Sr <sub>46</sub> Al <sub>14</sub> Co <sub>20</sub> Y <sub>21</sub>	1.80	0.20	1327	375	-4.60	11.10	1.28	1.28	0.37	3.74	2.67	60	64	AM	55
						Quinary All	oys								
Fe <sub>81</sub> Si <sub>2</sub> B <sub>13</sub> Nb <sub>3</sub> Cu <sub>1</sub>	1.19	0.12	1902	241	-15.49	5.62	0.67	1.85	0.08	7.21	1.82	188	52	SS	10
Fe <sub>73.5</sub> Si <sub>13.5</sub> B <sub>9</sub> Nb <sub>3</sub> Cu	1.20	0.11	1866	231	-24.07	5.67	0.86	1.85	0.08	6.95	1.92	174	52	SS	10
CoCrCu <sub>0.5</sub> FeNi	1.25	0.01	1815	235	0.49	3.53	1.58	1.83	0.09	8.56	1.64	169	13	SS	56
CoCrCuFeNi	1.25	0.01	1769	261	3.20	4.05	1.61	1.84	0.09	8.80	1.72	166	15	SS	57
NiCoFeCrMo <sub>0.3</sub>	1.25	0.02	1943	314	-4.15	1.79	1.54	1.84	0.13	8.09	1.54	177	17	SS	58
NiCoFeCrAl <sub>0.3</sub>	1.26	0.04	1806	296	-7.27	3.91	1.54	1.81	0.11	7.88	1.96	166	26	SS	58
CoCrFeNiAl <sub>0.25</sub>	1.26	0.03	1817	282	-6.75	3.68	1.53	1.81	0.11	7.94	1.89	167	24	SS	59
CoCr₂FeNiAl <sub>0.3</sub>	1.26	0.03	1877	304	-6.92	3.36	1.47	1.78	0.11	7.53	1.91	165	23	IM+SS	24
Co <sub>1.5</sub> Cr <sub>0.5</sub> FeMn <sub>0.5</sub> Ni	1.26	0.03	1787	162	-3.51	1.79	1.52	1.81	0.12	8.44	1.26	169	19	SS	24
FeNi <sub>2</sub> CrCuAl <sub>0.2</sub>	1.26	0.03	1729	302	0.12	5.05	1.44	1.83	0.10	8.77	2.10	163	23	SS	60
Al <sub>0.3</sub> CoCrFeNi	1.26	0.04	1806	296	-7.27	3.91	1.54	1.81	0.11	7.88	1.96	166	26	IM+SS	61
NiCoFeCrAl <sub>0.375</sub>	1.26	0.04	1791	314	-7.99	4.21	1.56	1.80	0.11	7.80	2.04	164	28	SS	59
CuNi2FeCrAl <sub>0.4</sub>	1.27	0.04	1700	332	-1.70	5.61	1.50	1.82	0.11	8.56	2.33	159	28	SS	62
CoCuFeNiV	1.27	0.02	1770	262	-2.24	5.68	1.61	1.83	0.10	8.60	2.06	166	15	SS	63
Al <sub>0.5</sub> CoCrFeNi	1.27	0.05	1767	340	-9.09	4.60	1.58	1.80	0.11	7.67	2.16	162	31	SS	59
FeCrMnNiCo	1.27	0.03	1801	214	-4.16	2.20	1.61	1.77	0.14	8.00	1.41	162	22	SS	64
Al <sub>0.5</sub> CrCuFeNi <sub>2</sub>	1.27	0.04	1686	345	-2.51	5.82	1.52	1.82	0.11	8.45	2.43	158	30	SS	65
CoCrFeNiTi <sub>0.5</sub>	1.27	0.05	1879	171	-11.56	6.89	1.58	1.79	0.13	7.78	1.93	166	21	IM+SS	65
FeNi <sub>2</sub> CrCuAl <sub>0.6</sub>	1.27	0.04	1672	356	-3.27	5.99	1.53	1.82	0.12	8.36	2.51	156	31	SS	60
CoCrFeNiNb <sub>0.65</sub>	1.27	0.05	1995	347	-12.15	6.57	1.60	1.79	0.12	7.80	1.78	172	8	IM+SS	66
CoCrFeNiPd	1.27	0.04	1863	162	-5.60	3.06	1.61	1.90	0.17	8.60	1.50	174	8	SS	67
CrCuFeMnNi	1.27	0.03	1719	280	2.72	4.24	1.61	1.77	0.14	8.40	1.85	154	22	SS	68
CuNiCoFeMn	1.27	0.03	1637	172	1.76	3.60	1.61	1.81	0.13	9.00	1.41	158	24	SS	69
CoCrCuFeMn	1.27	0.03	1727	281	4.16	3.84	1.61	1.76	0.14	8.20	1.72	154	22	SS	23
CrCuFeMoNi	1.28	0.04	1995	521	4.64	5.45	1.61	1.89	0.16	8.20	2.04	176	30	SS	70
CoFeNiVMo <sub>0.6</sub>	1.28	0.03	2006	384	-9.53	4.47	1.59	1.86	0.16	7.74	1.87	180	21	IM+SS	71
FeNi <sub>2</sub> CrCuAl <sub>0.8</sub>	1.28	0.05	1647	375	-4.61	6.27	1.55	1.81	0.12	8.17	2.65	154	34	SS	60
AlCoCrFeNi <sub>2.1</sub>	1.28	0.05	1692	370	-11.94	5.51	1.55	1.80	0.12	7.70	2.49	158	37	IM+SS	72
Co <sub>0.5</sub> CrFeMn <sub>1.5</sub> Ni	1.28	0.04	1776	231	-4.04	2.35	1.56	1.73	0.15	7.80	1.40	156	25	IM+SS	24
CoFeNi <sub>2</sub> V <sub>0.5</sub> Nb <sub>0.75</sub>	1.28	0.05	1941	354	-15.91	7.63	1.50	1.82	0.12	8.24	1.95	175	7	IM+SS	73
Co <sub>2</sub> Mo <sub>0.5</sub> Ni <sub>2</sub> VW <sub>0.5</sub>	1.28	0.04	2078	590	-8.94	4.55	1.45	1.91	0.19	8.17	1.95	192	39	IM+SS	74
CuNi₂FeCrAl <sub>0.9</sub>	1.28	0.05	1635	383	-5.22	6.38	1.56	1.81	0.12	8.08	2.71	152	35	SS	62
CuNi <sub>2</sub> FeMn <sub>2</sub> Cr	1.28	0.04	1692	247	-0.49	3.90	1.55	1.76	0.15	8.43	1.76	153	24	SS	75
CoFeNi <sub>1.4</sub> VMo	1.28	0.04	2051	434	-9.16	4.35	1.60	1.88	0.16	7.78	1.89	184	23	IM+SS	71

CoFeMnNiV	1.28	0.03	1802	215	-8.96	4.30	1.61	1.76	0.14	7.80	1.72	162	22	SS	23
FeCoNiMnV	1.28	0.03	1802	215	-8.96	4.30	1.61	1.76	0.14	7.80	1.72	162	22	IM+SS	76
FeNi₂CrCuAl	1.28	0.05	1623	390	-5.78	6.47	1.56	1.80	0.12	8.00	2.77	151	36	SS	60
MnCrFe <sub>1.5</sub> Ni <sub>0.5</sub> Al <sub>0.3</sub>	1.28	0.05	1758	321	-5.51	3.76	1.48	1.72	0.13	7.19	1.65	151	29	SS	77
CoCrMnNiV	1.28	0.03	1876	264	-9.12	4.36	1.61	1.73	0.14	7.40	1.85	160	22	SS	23
NiCoCrMnV	1.28	0.03	1876	264	-9.12	4.36	1.61	1.73	0.14	7.40	1.85	160	22	IM+SS	76
AlCoCrFeNi	1.28	0.06	1684	409	-12.32	5.50	1.61	1.78	0.12	7.20	2.48	153	39	IM+SS	78
Al <sub>1.2</sub> CrCuFeNi <sub>2</sub>	1.29	0.06	1601	403	-6.78	6.62	1.57	1.80	0.13	7.84	2.86	149	38	IM+SS	62
Co <sub>2</sub> Mo <sub>0.8</sub> Ni <sub>2</sub> VW <sub>0.8</sub>	1.29	0.04	2189	674	-8.30	4.34	1.52	1.94	0.21	7.97	1.96	199	45	IM+SS	74
CoCrFeNiAl <sub>1.17</sub>	1.29	0.06	1659	423	-13.10	5.66	1.61	1.77	0.12	7.06	2.55	151	41	SS	59
CrMnFe <sub>1.5</sub> Ni <sub>0.5</sub> Al <sub>0.5</sub>	1.29	0.05	1721	357	-7.26	4.34	1.52	1.71	0.13	7.00	1.83	147	33	IM+SS	24
AlCrCuFeNi	1.29	0.06	1602	424	-4.00	6.48	1.61	1.78	0.12	7.60	2.87	145	37	SS	70
FeCoNiCuAl	1.29	0.06	1520	335	-5.28	6.70	1.61	1.83	0.11	8.20	2.79	149	39	SS	79
FeCoNiCrTi	1.29	0.07	1886	164	-16.32	8.37	1.61	1.76	0.14	7.40	2.15	160	26	IM+SS	80
FeCoNiMnMo	1.29	0.04	1944	486	-4.00	2.51	1.61	1.87	0.19	8.00	1.41	176	35	IM+SS	76
AlCrCu <sub>0.5</sub> FeNi	1.29	0.06	1629	439	-7.70	6.28	1.58	1.77	0.12	7.22	2.78	146	39	SS	81
AlCoCrCuNi	1.29	0.06	1593	420	-6.56	6.63	1.61	1.79	0.13	7.80	2.93	147	39	SS	29
AlCoCrCu <sub>0.5</sub> Ni	1.29	0.06	1620	435	-10.17	6.62	1.58	1.78	0.13	7.44	2.87	148	41	SS	81
CuNi <sub>2</sub> FeCrAl <sub>1.5</sub>	1.29	0.06	1570	417	-8.05	6.77	1.56	1.79	0.13	7.62	2.98	145	40	SS	62
AlCrFeNiMo <sub>0.5</sub>	1.30	0.06	1800	578	-11.85	4.97	1.58	1.80	0.17	6.67	2.45	156	47	SS	
Al <sub>2</sub> CrCuFeNi <sub>2</sub>	1.30	0.06	1525	434	-9.63	6.88	1.55	1.78	0.13	7.29	3.10	140	43	IM	62
Co <sub>2</sub> Mo <sub>1.75</sub> Ni <sub>2</sub> VW <sub>1.75</sub>	1.30	0.04	2436	775	-6.74	3.71	1.58	2.01	0.23	7.53	1.91	215	53	IM+SS	74
CrMnFe <sub>1.5</sub> Ni <sub>0.5</sub> Al <sub>1.2</sub>	1.31	0.06	1615	427	-11.29	5.26	1.56	1.70	0.12	6.46	2.18	138	39	SS	24
CoCrFeNiAl <sub>2</sub>	1.31	0.07	1559	466	-15.44	5.89	1.56	1.75	0.13	6.50	2.75	140	46	SS	59
FeNiCrMnTi	1.31	0.07	1836	220	-13.28	7.23	1.61	1.70	0.15	7.00	2.00	148	28	IM+SS	76
CoCrCuFeZr <sub>0.8</sub>	1.31	0.10	1837	296	-9.69	10.48	1.61	1.74	0.20	7.75	2.35	147	37	AM+IM	82
FeNiCrCoAl <sub>2.5</sub>	1.32	0.07	1511	478	-16.09	5.77	1.52	1.74	0.13	6.23	2.81	135	47	SS	70
CrCuFeNiZr	1.32	0.11	1841	298	-14.40	11.94	1.61	1.73	0.22	7.80	2.56	144	39	SS	70
$Au_{29}Ag_{5.5}Pd_{2.3}Cu_{26.9}Si_{16.3}$	1.33	0.09	1423	159	-21.88	7.59	1.34	2.14	0.30	9.55	2.81	159	49	AM	28
AlCrMoSiTi	1.33	0.09	1927	640	-34.08	14.83	1.61	1.77	0.23	4.60	1.20	135	55	IM	83
TiZrCuNiBe	1.34	0.13	1743	272	-30.24	13.76	1.61	1.65	0.22	6.20	3.60	126	36	AM	84
$Ti_{50}Cu_{20}Ni_{24}Si_{4}B_{2}$	1.35	0.10	1771	237	-29.88	11.90	1.22	1.73	0.19	6.82	3.24	137	39	AM	85
$Ti_{50}Ni_{20}Cu_{25}Sn_3Be_7$	1.36	0.09	1695	313	-20.99	9.22	1.29	1.71	0.18	6.68	3.41	130	29	AM	85
AlCrMnTiV	1.36	0.06	1751	475	-14.88	6.90	1.61	1.60	0.05	5.00	1.41	125	32	IM	86
Cu <sub>47</sub> Ti <sub>33</sub> Zr <sub>11</sub> Ni <sub>8</sub> Si	1.37	0.09	1668	306	-16.89	8.33	1.21	1.72	0.21	7.77	3.42	125	27	AM	87
AlCrNbTiV	1.38	0.06	1997	595	-14.56	6.81	1.61	1.61	0.04	4.60	1.02	135	36	IM	88
MoNbTaVW	1.38	0.03	2963	510	-4.64	2.22	1.61	1.85	0.34	5.40	0.49	214	54	SS	89
$Zr_{17}Ta_{16}Ti_{19}Nb_{22}Si_{26}$	1.39	0.11	2301	573	-48.64	24.36	1.59	1.60	0.20	4.38	0.49	128	45	AM	90
AlMnNbTiV	1.40	0.04	1865	613	-15.52	7.29	1.61	1.59	0.04	4.80	1.33	127	34	IM	23
$Zr_{41}Ti_{14}Cu_{12.5}Ni_{10}Be_{22.5}$	1.40	0.14	1838	289	-35.15	13.44	1.47	1.54	0.22	5.03	3.09	109	36	AM	91
Zr <sub>41.2</sub> Ti <sub>13.8</sub> Cu <sub>12.5</sub> Ni <sub>10</sub> Be <sub>22.5</sub>	1.40	0.14	1838	289	-35.20	13.42	1.46	1.54	0.22	5.03	3.09	109	36	AM	3
Zr <sub>39.88</sub> Ti <sub>15.12</sub> Ni <sub>9.98</sub> Cu <sub>13.77</sub> Be <sub>21.25</sub>	1.40	0.14	1833	291	-34.27	13.44	1.48	1.55	0.22	5.14	3.15	110	36	AM	3
Zr <sub>42.63</sub> Ti <sub>12.37</sub> Cu <sub>11.25</sub> Ni <sub>10</sub> Be <sub>23.75</sub>	1.40	0.14	1843	287	-36.14	13.34	1.44	1.54	0.22	4.91	3.04	108	37	AM	3

Zr <sub>38.5</sub> Ti <sub>16.5</sub> Ni <sub>9.75</sub> Cu <sub>15.15</sub> Be <sub>20</sub>	1.40	0.14	1828	293	-33.22	13.37	1.50	1.56	0.22	5.25	3.19	110	36	AM	3
Zr <sub>44</sub> Ti <sub>11</sub> Cu <sub>10</sub> Ni <sub>10</sub> Be <sub>25</sub>	1.40	0.14	1848	286	-37.07	13.19	1.41	1.53	0.21	4.80	2.98	108	37	AM	3
Zr <sub>45.38</sub> Ti <sub>9.62</sub> Cu <sub>8.75</sub> Ni <sub>10</sub> Be <sub>26.25</sub>	1.40	0.15	1854	284	-38.00	12.97	1.38	1.52	0.21	4.69	2.91	107	37	AM	3
Zr <sub>46.75</sub> Ti <sub>8.25</sub> Cu <sub>7.5</sub> Ni <sub>10</sub> Be <sub>27.5</sub>	1.40	0.15	1859	282	-38.92	12.66	1.34	1.51	0.21	4.58	2.84	106	37	AM	3
TiZrNbMoV₃	1.40	0.07	2323	328	-2.53	1.62	1.48	1.65	0.23	4.86	0.64	152	46	SS	42
Ni <sub>40</sub> Cu <sub>6</sub> Ti <sub>16</sub> Zr <sub>28</sub> Al <sub>10</sub>	1.40	0.11	1772	348	-42.81	13.82	1.42	1.66	0.25	6.72	3.17	125	48	AM	14
Ti <sub>40</sub> Zr <sub>25</sub> Ni <sub>3</sub> Cu <sub>12</sub> Be <sub>20</sub>	1.40	0.12	1835	262	-25.88	11.14	1.39	1.55	0.18	4.62	2.72	110	27	AM	92
$Ni_{40}Cu_5Ti_{17}Zr_{28}AI_{10}$	1.40	0.11	1778	346	-43.25	13.70	1.40	1.65	0.25	6.65	3.15	125	48	AM	14
Ti <sub>40</sub> Zr <sub>25</sub> Ni <sub>8</sub> Cu <sub>9</sub> Be <sub>18</sub>	1.40	0.12	1850	247	-28.26	11.95	1.44	1.55	0.18	4.75	2.73	112	30	AM	85
CuNbNiTiZr	1.40	0.09	1981	462	-21.28	12.73	1.61	1.66	0.22	6.80	3.06	134	40	AM	93
TaNbVTiAl <sub>0.25</sub>	1.41	0.04	2446	633	-4.82	4.85	1.53	1.57	0.05	4.65	0.59	155	37	SS	36
TaNbVTiAl <sub>0.5</sub>	1.41	0.04	2362	706	-8.40	6.21	1.58	1.57	0.05	4.56	0.68	151	40	SS	36
CrNbTiVZr	1.41	0.09	2236	272	-4.64	3.05	1.61	1.55	0.12	4.80	0.75	134	38	IM+SS	38
AlCrTiVZr	1.41	0.09	1873	478	-20.32	9.75	1.61	1.55	0.12	4.40	1.02	115	39	IM	23
AlNbTaTiV	1.41	0.04	2219	795	-13.44	7.48	1.61	1.58	0.05	4.40	0.80	143	44	SS	36
TiZrNbMoV <sub>2</sub>	1.41	0.07	2347	349	-2.67	1.84	1.56	1.65	0.25	4.83	0.69	150	50	SS	42
TiZrNbMoV <sub>1.5</sub>	1.42	0.07	2362	361	-2.71	1.96	1.59	1.65	0.26	4.82	0.72	149	52	SS	42
ZrHfTiCuFe	1.43	0.10	1949	377	-15.84	8.48	1.61	1.58	0.25	6.20	2.86	120	33	AM	94
TiZrHfCuNi	1.43	0.10	1932	385	-27.36	13.32	1.61	1.60	0.27	6.60	3.20	122	36	AM	94
ZrHfTiCuCo	1.43	0.10	1940	381	-23.52	11.39	1.61	1.59	0.26	6.40	3.01	122	36	AM	94
MoNbTiVZr	1.43	0.07	2380	374	-2.72	2.10	1.61	1.65	0.27	4.80	0.75	148	54	SS	42
AlCrTaTiZr	1.44	0.08	2094	750	-20.00	10.10	1.61	1.53	0.11	4.40	1.02	123	50	AM	95
TiZrNbMoV <sub>0.75</sub>	1.44	0.07	2390	381	-2.70	2.18	1.60	1.65	0.28	4.79	0.77	148	56	SS	42
TiZrNbMoV <sub>0.5</sub>	1.45	0.07	2401	388	-2.67	2.26	1.58	1.65	0.29	4.78	0.79	147	57	SS	42
$Zr_{57}Ti_5Cu_{20}Ni_8Be_{10}$	1.45	0.12	1876	319	-30.62	10.29	1.22	1.52	0.25	5.68	3.20	101	38	AM	3
TiZrNbMoV <sub>0.25</sub>	1.46	0.06	2414	395	-2.60	2.35	1.53	1.66	0.30	4.76	0.81	146	59	SS	42
AINb <sub>1.5</sub> Ta <sub>0.5</sub> Ti <sub>1.5</sub> Zr <sub>0.5</sub>	1.46	0.03	2136	740	-15.12	9.64	1.50	1.55	0.08	4.20	0.75	126	45	SS	96
CrHfNbTiZr	1.46	0.09	2301	289	-4.00	3.57	1.61	1.49	0.15	4.60	0.80	124	36	IM+SS	97
Zr <sub>57</sub> Nb <sub>5</sub> Cu <sub>15.4</sub> Ni <sub>12.6</sub> Al <sub>10</sub>	1.48	0.10	1871	455	-33.61	11.42	1.25	1.53	0.25	5.78	3.01	101	43	AM	98
Al <sub>0.3</sub> NbTaTi <sub>1.4</sub> Zr <sub>1.3</sub>	1.48	0.05	2361	623	-4.41	7.27	1.52	1.49	0.10	4.34	0.59	128	50	SS	96
Zr <sub>58.5</sub> Nb <sub>2.8</sub> Cu <sub>15.6</sub> Ni <sub>12.8</sub> Al <sub>10.3</sub>	1.48	0.10	1851	441	-34.91	10.75	1.20	1.53	0.25	5.79	3.03	99	42	AM	99
HfMoNbTiZr	1.49	0.06	2444	362	-1.60	2.31	1.61	1.59	0.31	4.60	0.80	138	56	SS	100
HfNbTaTiZr	1.50	0.05	2523	476	2.72	1.21	1.61	1.45	0.12	4.40	0.49	132	46	SS	101
$Nd_{60}Al_{10}Ni_{10}Cu_{10}Fe_{10}$	1.50	0.12	1359	234	-22.12	8.93	1.23	1.41	0.34	5.00	3.13	76	59	AM	45
Nd <sub>60</sub> Al <sub>10</sub> Ni <sub>10</sub> Cu <sub>16</sub> Fe <sub>4</sub>	1.51	0.11	1332	204	-25.24	8.01	1.19	1.41	0.34	5.18	3.37	74	57	AM	45
$Nd_{60}AI_{10}Ni_{10}Cu_{18}Fe_2$	1.51	0.11	1323	193	-26.36	7.45	1.15	1.41	0.35	5.24	3.45	73	56	AM	45
Ni <sub>61</sub> Al <sub>11</sub> Ni <sub>8</sub> Co <sub>5</sub> Cu <sub>15</sub>	1.51	0.11	1322	201	-22.55	9.92	1.18	1.40	0.34	5.06	3.33	72	56	AM	3
$Nd_{60}AI_{15}Ni_{10}Cu_{10}Fe_5$	1.51	0.11	1316	227	-27.37	8.40	1.20	1.40	0.33	4.75	3.08	71	55	AM	3
$Al_{20}Li_{20}Mg_{10}Sc_{20}Ti_{30}$	1.52	0.05	1315	600	-0.40	14.12	1.56	1.38	0.23	2.80	1.08	66	36	SS	102
AlTiVYZr	1.52	0.11	1797	453	-14.88	13.56	1.61	1.47	0.16	3.80	0.75	92	41	AM+IM	63
$Mg_{65}Cu_{15}Ag_5Pd_5Gd_{10}$	1.55	0.09	1115	285	-13.24	8.16	1.09	1.46	0.30	4.30	3.77	68	43	AM	103
Ce <sub>57</sub> Al <sub>10</sub> Ni <sub>12.5</sub> Cu <sub>15.5</sub> Nb <sub>5</sub>	1.61	0.16	1268	413	-22.06	11.49	1.25	1.41	0.35	5.22	3.37	73	64	AM	52
La <sub>55</sub> Al <sub>25</sub> Ni <sub>5</sub> Cu <sub>10</sub> Co <sub>5</sub>	1.64	0.16	1200	224	-32.31	7.96	1.21	1.39	0.33	4.45	2.92	66	52	AM	53

Control   Cont																
Secure   S	$Ce_{65}AI_{10}Ni_{10}Cu_{10}Nb_5$	1.65	0.14	1236	409	-19.86	11.51	1.12	1.35	0.33	4.60	2.99	62	60	AM	52
Vieliforus   17%   0.01   1777   1277   0.00   0.00   0.00   1.61   1.19   0.05   3.00   0.00   41   4   5.50   1.65	GdTbDyTmLu	1.73	0.05	1731	129	0.00	0.00	1.61	1.21	0.06	3.00	0.00	42	4	SS	104
Hearth   1,18	SrCaYbMgZn	1.76	0.15	975	156	-13.12	6.45	1.61	1.20	0.26	4.20	3.92	35	21	AM	105
Commitment   181   0.02   1509   213   0.00   0.00   1.61   1.17   0.06   1.00   0.00   37   5   55   55   181	YGdTbDyLu	1.78	0.01	1727	127	0.00	0.00	1.61	1.20	0.06	3.00	0.00	41	4	SS	104
Number   Composition   Compo	HoDyYGdTb	1.78	0.01	1689	77	0.00	0.00	1.61	1.19	0.05	3.00	0.00	40	1	SS	106
Nighthoforkhop-line   121   0.11   1700   657   28.95   9.05   1.17   1.94   0.15   8.33   2.48   166   77   AM   18	GdHoLaTbY	1.81	0.02	1591	213	0.00	0.00	1.61	1.17	0.06	3.00	0.00	37	5	SS	107
CLU, INCOCOM, 1976, 1							Senary Allo	oys								
Countricochalpten   126	$Ni_{65}Nb_5Cr_5Mo_5P_{14}B_6$	1.21	0.11	1700	657	-28.95	9.05	1.17	1.94	0.15	8.23	2.48	166	72	AM	108
CoupyMoreCrificing   1.0	Cu <sub>0.5</sub> NiCoCrAl <sub>0.5</sub> Fe <sub>3.5</sub>	1.26	0.04	1755	285	-2.58	4.45	1.52	1.81	0.09	8.00	1.86	163	25	SS	81
Nicerectings   126   0.04   1813   334   7.726   3.88   1.72   1.81   0.12   7.84   1.55   1.07   27   55   34     Feconicicidals   1.26   0.04   1813   314   7.726   3.88   1.62   1.81   0.12   7.84   1.65   1.07   27   55   35   1.81     Cushilocicials   1.26   0.04   1813   314   7.726   3.38   1.62   1.81   0.12   0.00   8.47   2.14   1.61   2.5   55   1.81     Cushilocicials   1.26   0.04   1714   317   3.53   4.96   1.68   1.81   0.10   8.00   2.08   1.61   2.8   55   1.81     Cushilocicials   1.27   0.04   1727   315   5.19   5.24   1.68   1.82   0.11   8.33   2.21   1.63   2.9   1.64   3.5   1.01     Coccurement   1.27   0.04   1727   346   4.60   5.44   1.75   1.81   0.11   8.00   2.28   1.60   30   55   1.00     Coccurement   1.27   0.04   1.693   346   1.52   5.64   1.77   1.82   0.11   8.70   2.14   1.58   2.2   3.55   1.00     Feconicicials   1.27   0.04   1.693   346   1.52   5.64   1.77   1.82   0.11   8.72   2.34   1.58   30   10.4   5.5   1.34     Alcolicials   1.27   0.05   1.685   347   7.72   5.80   1.62   1.81   0.11   7.93   2.32   1.59   35   5.5   1.5     Alcolicials   1.28   0.05   1.694   3.77   3.81   6.00   1.67   1.82   0.12   8.07   2.22   1.58   3.5   5.5   1.5     Alcolicials   1.28   0.05   1.654   3.77   3.81   6.10   1.79   1.80   0.12   8.07   2.25   1.58   3.5   5.5   1.5     Alcolicials   1.28   0.05   1.667   3.86   3.71   3.50   5.91   3.71   1.79   0.12   7.71   2.53   1.54   3.5   5.5   1.5     Alcolicials   1.28   0.05   1.669   3.86   3.71   3.61   6.10   1.79   1.80   0.12   8.07   2.25   1.54   3.5   5.5   1.5     Alcolicials   1.28   0.05   1.669   3.86   3.71   3.74   5.91   3.71   3.80   0.12   7.77   2.45   3.5   1.54   3.5   5.5   1.5     Alcolicials   1.28   0.05   1.669   3.86   3.71   3.74   5.91   3.71   3.80   0.12   7.70   2.53   1.54   3.7   5.5   1.5     Alcolicials   1.28   0.05   1.669   3.86   3.71   3.86   6.05   1.75   1.78   0.12   7.72   2.53   1.54   3.7   5.5   1.5     Alcolicials   1.28   0.05   1.669   3.85   3.71   3.85   3.85   3.75   3.7	Cu <sub>0.5</sub> NiCoCrAl <sub>0.5</sub> Fe <sub>3</sub>	1.26	0.04	1751	295	-2.84	4.60	1.57	1.81	0.09	8.00	1.93	163	26	SS	81
FecoNicCounty    1.26	Cu <sub>0.75</sub> NiCoFeCrAl <sub>0.25</sub>	1.26	0.03	1748	307	-0.71	4.94	1.72	1.82	0.10	8.40	2.06	163	24	SS	109
Cushincoccal-bishes    1.26   0.04   1741   317   333   4.98   1.68   1.81   0.10   8.00   2.08   1.61   28   55   51	NiCoFeCrMo <sub>0.1</sub> Al <sub>0.3</sub>	1.26	0.04	1831	334	-7.26	3.88	1.62	1.81	0.12	7.84	1.95	167	27	SS	58
AlicoCriciusFeNi   1.26   0.04   1727   315   5.19   5.24   1.68   1.82   0.11   8.30   2.21   163   29   104-55   119	FeCoNiCrCuAl <sub>0.3</sub>	1.26	0.03	1722	319	0.16	5.19	1.74	1.82	0.10	8.47	2.14	161	25	SS	110
ClushKoFelaisCr   127   0.04   1727   346   -4.60   5.44   1.75   1.81   0.11   8.00   2.8   160   30   55   170	Cu <sub>0.5</sub> NiCoCrAl <sub>0.5</sub> Fe <sub>2</sub>	1.26	0.04	1741	317	-3.53	4.98	1.68	1.81	0.10	8.00	2.08	161	28	SS	81
CocifeMicrocalists   127   0.03   1727   256   1.44   3.87   1.79   1.79   0.14   8.50   1.71   158   22   SS   41	Al <sub>0.5</sub> CoCrCu <sub>0.5</sub> FeNi <sub>2</sub>	1.26	0.04	1727	315	-5.19	5.24	1.68	1.82	0.11	8.33	2.21	163	29	IM+SS	111
FeCONICCUAIDS   1.27	Cu <sub>0.5</sub> NiCoFeAl <sub>0.5</sub> Cr	1.27	0.04	1727	346	-4.60	5.44	1.75	1.81	0.11	8.00	2.28	160	30	SS	109
Cocifeniculars   1.27   0.04   1693   346   -1.52   5.64   1.77   1.82   0.11   8.27   2.34   158   30   104-55   134   32   346   347   7.25   5.64   1.77   1.82   0.11   8.27   2.34   158   30   104-55   134   355   41   Alcoscrousteni   1.27   0.05   1690   336   -7.03   5.45   1.57   1.82   0.11   8.00   2.26   161   34   55   41   Alcoscrousteni   1.28   0.05   1654   377   -3.61   6.10   1.79   1.80   0.12   8.00   2.56   154   34   55   41   Alcoscrousteni   1.28   0.05   1654   377   -3.61   6.10   1.79   1.80   0.12   8.00   2.56   154   34   55   41   Alcoscrousteni   1.28   0.05   1672   371   7.67   5.91   1.71   1.80   0.12   7.77   2.45   156   36   55   41   Alcoscrousteni   1.28   0.05   1667   386   7.14   5.92   1.75   1.79   0.12   7.78   2.59   154   36   55   41   Alcoscrousteni   1.28   0.05   1664   385   7.83   6.05   1.75   1.78   0.12   7.42   2.53   153   36   55   41   Alcoscrousteni   1.28   0.05   1664   385   7.83   6.05   1.75   1.78   0.12   7.67   2.53   154   37   55   41   Alcoscrousteni   1.28   0.05   1664   385   7.83   6.05   1.75   1.78   0.12   7.67   2.53   154   37   55   41   Alcoscrousteni   1.28   0.05   1664   385   7.83   6.05   1.75   1.78   0.12   7.67   2.53   154   37   55   41   Alcoscrousteni   1.28   0.06   1664   385   7.83   6.05   1.75   1.78   0.12   7.67   2.53   154   37   55   41   Alcoscrousteni   1.28   0.06   1664   385   7.83   6.05   1.75   1.80   0.12   7.67   2.53   154   37   55   41   Alcoscrousteni   1.28   0.06   1664   385   7.83   6.05   1.75   1.80   0.12   7.67   2.53   154   37   55   41   Alcoscrousteni   1.28   0.06   1664   385   7.83   6.05   1.75   1.80   0.12   7.67   2.53   154   37   55   41   Alcoscrousteni   1.28   0.06   1664   385   7.83   6.05   1.75   1.80   0.12   7.67   2.53   154   37   55   41   Alcoscrousteni   1.28   0.06   1664   385   7.83   6.05   1.75   1.80   0.12   7.67   2.53   154   37   55   41   Alcoscrousteni   1.29   0.06   1664   385   7.83   6.05   1.75   1.80   0.12   7.67   2.53   154   37   55	CoCrCuFeMnNi	1.27	0.03	1727	256	1.44	3.87	1.79	1.79	0.14	8.50	1.71	158	22	SS	64
AlCapic Cruas Feni 1.27 0.05 1690 336 -7.03 5.45 1.57 1.82 0.11 8.00 2.26 161 34 SS 81 AlCapic Cruas Feni 1.27 0.05 1685 347 7.725 5.60 162 1.81 0.11 7.93 2.32 199 35 SS 81 AlCapic Cruas Feni 1.28 0.05 1670 356 8.845 6.00 1.67 1.82 0.12 8.07 2.52 158 35 SS 81 AlCapic Cruas Feni 1.28 0.05 1670 356 8.845 6.00 1.67 1.82 0.12 8.07 2.52 158 35 SS 81 AlCapic Cruas Feni 1.28 0.05 1654 377 3.61 6.10 1.79 1.80 0.12 7.31 2.46 1.53 35 SS 81 AlCapic Cruas Feni 1.28 0.05 1654 377 3.61 6.10 1.79 1.80 0.12 7.31 2.46 1.53 35 SS 81 AlCapic Cruas Feni 1.28 0.05 1672 371 7.67 5.91 1.71 1.70 0.12 7.31 2.46 1.53 35 SS 81 AlCapic Cruas Feni 1.28 0.05 1672 371 7.67 5.91 1.71 1.80 0.12 7.77 2.45 1.56 36 SS 81 AlCapic Cruas Feni 1.28 0.05 1667 386 7.714 5.92 1.75 1.79 0.12 7.58 2.50 1.54 36 SS 81 AlCapic Cruas Feni 1.28 0.05 1667 386 7.714 5.92 1.75 1.79 0.12 7.58 2.50 1.54 36 SS 81 AlCapic Cruas Feni 1.28 0.05 1664 385 7.83 6.05 1.75 1.78 0.12 7.42 2.53 1.53 36 SS 81 AlCapic Cruas Feni 1.28 0.05 1664 385 7.83 6.05 1.75 1.80 0.12 7.67 2.53 1.54 37 SS 81 Cocicul Feni Nila 1.28 0.05 1664 385 7.83 6.05 1.75 1.80 0.12 7.67 2.53 1.54 37 SS 81 AlCapic Cruas Feni 1.28 0.05 1664 385 7.83 6.05 1.75 1.80 0.12 7.67 2.53 1.54 37 SS 81 AlCapic Cruas Feni 1.28 0.05 1664 385 7.83 6.05 1.75 1.80 0.12 7.67 2.53 1.54 37 SS 81 AlCapic Cruas Feni 1.28 0.05 1630 392 4.78 6.31 1.79 1.80 0.12 7.67 2.53 1.54 37 SS 81 AlCapic Cruas Feni 1.28 0.05 1630 392 4.78 6.31 1.79 1.80 0.12 7.82 2.79 1.49 38 SS 81 AlCapic Cruas Feni 1.29 0.06 1634 419 7.792 6.26 1.75 1.78 0.12 7.80 2.27 9.149 37 SS 81 AlCapic Cruas Feni 1.29 0.06 1643 419 7.792 6.26 1.75 1.78 0.12 7.80 2.27 9.149 37 SS 81 AlCapic Feni 1.29 0.06 1643 419 7.792 6.26 1.75 1.78 0.12 7.80 2.27 9.149 37 SS 81 AlCapic Feni 1.29 0.06 1670 382 4.83 6.83 1.79 1.79 0.14 8.00 2.28 1.57 3.9 1.59 1.50 1.70 1.70 2.69 1.51 3.9 SS 81 AlCapic Feni 1.29 0.06 1675 431 1.33.2 5.91 1.67 1.77 0.12 7.16 2.48 1.54 3.9 SS 81 AlCapic Feni 1.29 0.06 1673 4.49 7.728 6.09 1.75 1.78 0.12 7.70 2.69 1.51 3.9 SS 1.7 Alagoric Lapis Minhi	FeCoNiCrCuAl <sub>0.5</sub>	1.27	0.04	1693	346	-1.52	5.64	1.77	1.82	0.11	8.27	2.34	158	30	SS	110
AlCo,CrCua,SerNia 1.27 0.05 1685 347 -7.25 5.60 1.62 1.81 0.11 7.93 2.32 159 35 SS 81 AlCo,CrCua,SerNia 1.28 0.05 1670 356 -8.45 6.00 1.67 1.82 0.12 8.07 2.52 158 35 SS 81 AlCo,CrCua,SerNia 1.28 0.05 1654 377 -3.61 6.10 1.79 1.80 0.12 8.00 2.56 154 34 SS 37 AlCo,CrCua,SerNi 1.28 0.05 1654 377 -3.61 6.10 1.79 1.80 0.12 7.31 2.46 153 35 SS 81 AlCo,CrCua,SerNi 1.28 0.05 1672 371 -7.67 5.91 1.71 1.80 0.12 7.77 2.45 156 36 SS 81 AlCo,CrCua,SerNi 1.28 0.05 1667 386 -7.14 5.92 1.75 1.79 0.12 7.58 2.50 154 36 SS 81 AlCo,CrCua,SerNi 1.28 0.05 1667 386 -7.14 5.92 1.75 1.79 0.12 7.58 2.50 154 36 SS 81 AlCo,CrCua,SerNi 1.28 0.05 1667 386 -7.14 5.92 1.75 1.79 0.12 7.58 2.50 154 36 SS 81 AlCo,Cr,Scua,SerNi 1.28 0.05 1664 385 -7.83 6.05 1.75 1.80 0.12 7.42 2.53 153 36 SS 81 AlCo,CrCua,SerNi 1.28 0.05 1664 385 -7.83 6.05 1.75 1.80 0.12 7.67 2.53 154 37 SS 81 CO,CrCua,SerNi 1.28 0.05 1664 385 -7.83 6.05 1.75 1.80 0.12 7.67 2.53 154 37 SS 81 CO,CrCua,SerNi 1.28 0.05 1664 385 -7.83 6.05 1.75 1.80 0.12 7.67 2.53 154 37 SS 81 ALCo,Scua,SerNi 1.28 0.05 1664 385 -7.83 6.05 1.75 1.80 0.12 7.67 2.53 154 37 SS 81 ALCo,Scua,SerNi 1.28 0.05 1630 392 -4.78 6.31 1.79 1.80 0.12 7.67 2.53 154 37 SS 81 ALCo,Scua,SerNi 1.29 0.06 1654 401 -7.93 6.18 1.77 1.79 0.12 7.55 2.61 152 38 AM 115 ALCo,Scua,SerNi 1.29 0.06 1654 401 -7.93 6.18 1.77 1.79 0.12 7.55 2.61 152 38 AM 115 ALCo,Scua,SerNi 1.29 0.06 1643 419 -7.92 6.26 1.75 1.76 0.12 7.70 2.69 151 39 SS 81 ALCO,Cro,SerNi 1.29 0.06 1643 419 -7.92 6.26 1.75 1.76 0.12 7.70 2.69 151 39 SS 81 ALCO,Cro,SerNi 1.29 0.06 1647 419 -7.82 6.09 1.77 1.80 0.12 7.70 2.69 151 39 SS 81 ALCO,Cro,SerNi 1.29 0.06 1602 382 -8.32 6.47 1.75 1.80 0.12 7.70 2.69 151 39 SS 81 ALCO,Cro,SerNi 1.29 0.06 1602 382 -8.32 6.47 1.75 1.80 0.12 7.70 2.69 151 39 SS 81 ALCO,Cro,SerNi 1.29 0.06 1602 382 -8.32 6.47 1.75 1.80 0.12 7.70 2.69 151 39 SS 81 ALCO,Cro,SerNi 1.29 0.06 1602 382 -8.32 6.47 1.75 1.80 0.12 7.70 2.69 151 39 SS 81 ALCO,Cro,SerNi 1.29 0.06 1602 382 -8.32 6.47 1.75 1.80 0.12 7.70 2.69 151 39 SS 81 ALCO,Cro,SerNi 1.29 0.	CoCrFeNiCuAl <sub>0.5</sub>	1.27	0.04	1693	346	-1.52	5.64	1.77	1.82	0.11	8.27	2.34	158	30	IM+SS	112
ACCOCCUGASPENIA 1.28 0.05 1670 356 -8.45 6.00 1.67 1.82 0.12 8.07 2.52 158 35 SS 81 CUCONICYARGAFE 1.28 0.05 1654 377 -3.61 6.10 1.79 1.80 0.12 8.00 2.56 154 34 SS 37 ACCCCCUGASPENI 1.28 0.05 1735 414 -7.20 5.64 1.71 1.77 0.12 7.31 2.46 153 35 SS 81 ACCCCCUGASPENI 1.28 0.05 1672 371 -7.67 5.91 1.71 1.80 0.12 7.77 2.45 156 36 SS 81 ACCCCCUGASPENI 1.28 0.05 1667 386 -7.14 5.92 1.75 1.79 0.12 7.58 2.50 154 36 SS 81 ACCCCCUGASPENI 1.28 0.05 1667 386 -7.14 5.92 1.75 1.79 0.12 7.58 2.50 154 36 SS 81 ACCCCCUGASPENI 1.28 0.05 1664 385 -7.83 6.05 1.75 1.80 0.12 7.67 2.53 153 36 SS 81 ACCCCUGASPENI 1.28 0.05 1664 385 -7.83 6.05 1.75 1.80 0.12 7.67 2.53 154 37 SS 81 COCCCUPANITOS 1.28 0.06 1793 250 -6.75 8.18 1.79 1.80 0.12 7.67 2.53 154 37 SS 81 COCCCUPANITOS 1.28 0.06 1630 392 -4.78 6.31 1.79 1.80 0.12 7.83 2.67 151 36 IMM+SS 1.14 CUGASPCUGASPENI 1.28 0.06 1654 401 -7.93 6.18 1.77 1.79 0.12 7.55 2.61 152 38 AM 1.15 ACCCCUGASPENI 1.29 0.06 1643 419 -7.92 6.26 1.75 1.78 0.12 7.82 2.79 149 37 SS 81 ACCCCCPGASPENI 1.29 0.06 1643 419 -7.92 6.26 1.75 1.76 0.12 7.82 2.79 149 37 SS 81 ACCCCCPGASPENI 1.29 0.06 1643 419 -7.92 6.26 1.75 1.76 0.12 7.70 2.69 149 38 SS 81 ACCCCCPGASPENI 1.29 0.06 1643 419 -7.92 6.26 1.75 1.76 0.12 7.70 2.69 151 39 SS 81 ACCCCCPGASPENI 1.29 0.06 1643 419 -7.92 6.26 1.75 1.76 0.12 7.70 2.69 151 39 SS 81 ACCCCCPGASPENI 1.29 0.06 1643 419 -7.92 6.26 1.75 1.76 0.12 7.70 2.69 151 39 SS 81 ACCCCCPGASPENI 1.29 0.06 1647 419 -7.28 6.09 1.77 1.80 0.12 7.70 2.69 151 39 SS 81 ACCCCCPGASPENI 1.29 0.06 1602 382 -8.32 6.47 1.75 1.80 0.12 7.70 2.69 151 39 SS 81 ACCCCCPGASPENI 1.29 0.06 1647 419 -7.28 6.09 1.75 1.75 1.75 0.12 7.70 2.69 151 39 SS 81 ACCCCCPGASPENI 1.29 0.06 1673 419 -7.28 6.09 1.75 1.75 1.75 0.12 7.70 2.69 151 39 SS 81 ACCCCPGASPENI 1.29 0.06 1673 419 -7.28 6.09 1.75 1.75 1.75 0.14 7.70 2.20 1.45 39 SS 81 ACCCCPGASPENI 1.29 0.06 1673 419 -7.28 6.09 1.75 1.75 1.75 0.14 7.70 2.20 1.45 39 SS 81 ACCCCPGASPENI 1.29 0.06 1673 419 -7.28 6.09 1.75 1.75 1.75 0.14 7.70 2.20 1.45 39 SS 81 ACCCCPGASPENI 1.29 0.06	AlCo <sub>3.5</sub> CrCu <sub>0.5</sub> FeNi	1.27	0.05	1690	336	-7.03	5.45	1.57	1.82	0.11	8.00	2.26	161	34	SS	81
CUCONICCALGASFENIS 1.28 0.05 1654 377 -3.61 6.10 1.79 1.80 0.12 8.00 2.56 154 34 SS 37 AICOCCALGASFENIS 1.28 0.05 1735 414 -7.20 5.64 1.71 1.77 0.12 7.31 2.46 153 35 SS 81 AICOCCALGASFENIS 1.28 0.05 1672 371 -7.67 5.91 1.71 1.80 0.12 7.77 2.45 156 36 SS 81 AICOCCALGASFENIS 1.28 0.05 1667 386 -7.14 5.92 1.75 1.79 0.12 7.58 2.50 154 36 SS 81 AICOCCALGASFENIS 1.28 0.05 1667 386 -7.14 5.92 1.75 1.79 0.12 7.58 2.50 154 36 SS 81 AICOCCALGASFENIS 1.28 0.05 1668 385 -7.83 6.05 1.75 1.78 0.12 7.42 2.53 153 36 SS 81 AICOCCALGASFENIS 1.28 0.05 1664 385 -7.83 6.05 1.75 1.80 0.12 7.67 2.53 154 37 SS 81 COCCALGASFENIS 1.28 0.05 1664 385 -7.83 6.05 1.75 1.80 0.12 7.67 2.53 154 37 SS 81 AICOCCALGASFENIS 1.28 0.05 1664 385 -7.83 6.05 1.75 1.80 0.12 7.67 2.53 154 37 SS 81 AICOCCALGASFENIS 1.28 0.05 1630 392 -4.78 6.31 1.79 1.80 0.13 8.14 2.30 158 24 IM+5SS 113 FECONICCALGASFENIS 1.28 0.05 1630 392 -4.78 6.31 1.79 1.80 0.12 7.83 2.67 151 36 IM+SS 114 AICOCCALGASFENIS 1.29 0.06 1654 401 -7.93 6.18 1.77 1.79 0.12 7.55 2.61 152 38 AM 115 AICOCCALGASFENIS 1.29 0.06 1654 401 -7.93 6.18 1.77 1.79 0.12 7.55 2.61 152 38 AM 115 AICOCCALGASFENIS 1.29 0.06 1602 382 -8.32 6.47 1.75 1.80 0.12 7.82 2.79 149 37 SS 44 AICOCCALGASFENIS 1.29 0.06 1602 382 -8.32 6.47 1.75 1.80 0.12 7.82 2.79 149 37 SS 81 AICOCCALGASFENIS 1.29 0.06 1502 382 -8.32 6.47 1.75 1.80 0.12 7.70 2.69 151 39 SS 81 AICOCCALGASFENIS 1.29 0.06 1597 411 -6.24 6.53 1.79 1.79 0.14 8.00 2.28 157 2.5 IM+SS 113 AICOCCALGASFENIS 1.29 0.06 1597 411 -6.24 6.53 1.79 1.79 0.14 7.02 7.02 2.60 143 38 SS 81 AICOCCALGASFENIS 1.29 0.06 1735 459 -14.66 6.41 1.72 1.77 0.76 0.14 7.02 2.60 143 32 SS 81 AICOCCALGASFENIS 1.29 0.06 1735 459 -14.66 6.41 1.72 1.77 0.76 0.14 7.02 2.60 143 32 SS 81 AICOCCALGASFENIS 1.29 0.06 1575 441 1.66 4.61 1.77 1.76 0.14 7.92 2.60 143 32 SS 81 IM+SS 17 AIGUCALGASFENIS 1.29 0.06 1575 441 1.66 4.61 1.77 1.76 0.14 7.92 2.60 143 32 SS 81 IM+SS 17 AIGUCALGASFENIS 1.29 0.06 1735 459 -14.66 6.41 1.77 1.76 0.14 7.92 2.60 143 32 SS 81 IM+SS 17 AIGUCALGASFENIS 1.29 0.06 1575 4	AlCo <sub>3</sub> CrCu <sub>0.5</sub> FeNi	1.27	0.05	1685	347	-7.25	5.60	1.62	1.81	0.11	7.93	2.32	159	35	SS	81
AICOCITCUSSFENI 1.28 0.05 1672 371 -7.67 5.91 1.71 1.80 0.12 7.31 2.46 153 35 SS 81 AICOCITCUSSFELSNI 1.28 0.05 1672 371 -7.67 5.91 1.71 1.80 0.12 7.77 2.45 156 36 SS 81 AICOCITCUSSFELSNI 1.28 0.05 1667 386 -7.14 5.92 1.75 1.79 0.12 7.58 2.50 154 36 SS 81 AICOCITCUSSFELSNI 1.28 0.05 1667 386 -7.14 5.92 1.75 1.79 0.12 7.58 2.50 154 36 SS 81 AICOCITCUSSFELSNI 1.28 0.05 1668 385 -7.83 6.05 1.75 1.78 0.12 7.42 2.53 153 36 SS 81 AICOLISCITUSSFENI 1.28 0.05 1664 385 -7.83 6.05 1.75 1.80 0.12 7.67 2.53 154 37 SS 81 AICOLISCITUSSFENI 1.28 0.05 1664 385 -7.83 6.05 1.75 1.80 0.12 7.67 2.53 154 37 SS 81 AICOSTICUSSFENI 1.28 0.05 1630 392 -4.78 6.31 1.79 1.80 0.12 7.83 2.67 151 36 IM+SS 114 CUSSNIAICOCITE 1.28 0.06 1654 401 -7.93 6.18 1.77 1.79 0.12 7.55 2.61 152 38 AM 115 AICOSTICUSSFENI 1.29 0.06 1654 401 -7.93 6.18 1.77 1.79 0.12 7.55 2.61 152 38 AM 115 AICOSTICUSSFENI 1.29 0.05 1613 406 -5.55 6.49 1.77 1.80 0.12 7.82 2.79 149 37 SS 81 AICOCITCUSSFENI 1.29 0.05 1613 406 -5.55 6.49 1.77 1.80 0.12 7.82 2.79 149 37 SS 84 AICOCITSSIANI 1.29 0.05 1613 406 -5.55 6.49 1.77 1.80 0.12 7.82 2.79 149 37 SS 84 AICOCITSSIANI 1.29 0.06 1602 382 -8.32 6.47 1.75 1.80 0.12 7.80 2.69 151 39 SS 81 AICOCITSSIANI 1.29 0.06 1602 382 -8.32 6.47 1.75 1.80 0.12 7.70 2.69 151 39 SS 81 AICOCITSSIANI 1.29 0.06 1697 341 -13.32 5.91 1.67 1.77 0.12 7.16 2.48 154 39 SS 81 AICOCITSSIANI 1.29 0.06 1602 382 -8.32 6.47 1.75 1.80 0.12 7.70 2.69 151 39 SS 81 AICOCITSSIANI 1.29 0.06 1697 341 -6.24 6.53 1.79 1.79 0.12 7.60 2.80 147 39 SS 37 AICOCITSSIANI 1.29 0.06 1697 341 -6.24 6.53 1.79 1.79 0.12 7.60 2.80 147 39 SS 37 AICOCITSSIANI 1.29 0.05 1597 311 -6.24 6.53 1.79 1.79 0.12 7.00 2.47 154 39 IM+SS 37 AICOCITSSIANI 1.29 0.05 1597 364 -3.31 5.98 1.77 1.75 0.14 7.68 2.44 145 33 SS 38 AICOCITSSIANI 1.29 0.05 1597 364 -3.31 5.98 1.77 1.75 0.14 7.60 2.80 147 39 SS 37 AICOCITSSIANI 1.29 0.05 1597 364 -3.31 5.98 1.77 1.77 0.12 7.10 2.47 154 39 IM+SS 37 AICOCITSSIANI 1.29 0.05 1597 364 -3.31 5.98 1.79 1.79 0.12 7.60 2.80 147 39 SS 38 AICOCITSSIANI 1.29 0.05 1597 3	AlCoCrCu <sub>0.5</sub> FeNi <sub>2.5</sub>	1.28	0.05	1670	356	-8.45	6.00	1.67	1.82	0.12	8.07	2.52	158	35	SS	81
Alcocycroussfeni 1.28 0.05 1672 371 -7.67 5.91 1.71 1.80 0.12 7.77 2.45 156 36 SS 81  Alcocycroussfeni 1.28 0.05 1667 386 -7.14 5.92 1.75 1.79 0.12 7.58 2.50 154 36 SS 81  Alcocycroussfeni 1.28 0.05 1688 410 -7.56 5.90 1.75 1.78 0.12 7.42 2.53 153 36 SS 81  Alcocycroussfeni 1.28 0.05 1688 410 -7.56 5.90 1.75 1.78 0.12 7.67 2.53 154 37 SS 81  Alcotycroussfeni 1.28 0.05 1664 385 -7.83 6.05 1.75 1.80 0.12 7.67 2.53 154 37 SS 81  COCYCUPENITION 1.28 0.05 1630 392 -4.78 6.31 1.79 1.80 0.12 7.83 2.67 151 36 IM+SS 114  Cunshialcocyfeni 1.28 0.06 1654 401 -7.93 6.18 1.77 1.79 1.80 0.12 7.83 2.67 151 36 IM+SS 114  Cunshialcocyfeni 1.29 0.06 1643 419 -7.92 6.26 1.75 1.78 0.12 7.40 2.69 149 38 SS 81  Alcocycroussfeni 1.29 0.06 1643 419 -7.92 6.26 1.75 1.78 0.12 7.40 2.69 149 38 SS 81  Alcocycroussfeni 1.29 0.06 1663 431 -13.32 5.91 1.67 1.77 0.12 7.16 2.48 154 39 SS 81  Alcocysological 1.29 0.06 1602 382 8.32 6.47 1.75 1.80 0.12 7.70 2.69 151 39 SS 81  Alcocycroussfeni 1.29 0.06 1647 419 -7.28 6.09 1.75 1.78 0.12 7.70 2.69 151 39 SS 81  Alcocycroussfeni 1.29 0.06 1677 419 -7.28 6.09 1.75 1.78 0.12 7.70 2.69 151 39 SS 81  COCYCUPENITI 1.29 0.06 1798 247 8.44 8.58 1.79 1.79 0.12 7.50 2.80 147 39 SS 81  COCYCUPENITI 1.29 0.06 1798 247 8.44 8.58 1.79 1.79 0.12 7.60 2.80 147 39 SS 81  CUCONICYALisfe 1.29 0.06 1798 431 -6.24 6.53 1.79 1.79 0.12 7.60 2.80 147 39 SS 81  Alcocycroussfeni 1.29 0.06 1798 441 6.24 6.53 1.79 1.79 0.12 7.60 2.80 147 39 SS 81  Alcocycroussfeni 1.29 0.06 1798 441 6.24 6.53 1.79 1.79 0.12 7.60 2.80 147 39 SS 81  Alcocycroussfeni 1.29 0.06 1798 441 6.24 6.53 1.79 1.79 0.12 7.60 2.80 147 39 SS 83  Alcocycroussfeni 1.29 0.06 1798 459 -14.66 6.41 1.77 1.75 0.14 7.68 2.44 145 33 SS 81  Alcocycroussfeni 1.29 0.05 1591 367 -1.74 6.11 1.77 1.76 0.14 7.92 2.60 143 32 SS 88  Feconicyclusisemini 1.29 0.05 1591 367 -1.74 6.11 1.77 1.76 0.14 7.92 2.60 143 32 SS 88  Feconicyclusisemini 1.29 0.05 1591 367 -1.74 6.11 1.77 1.76 0.14 7.92 2.60 143 32 SS 88	CuCoNiCrAl <sub>0.8</sub> Fe	1.28	0.05	1654	377	-3.61	6.10	1.79	1.80	0.12	8.00	2.56	154	34	SS	57
AICOCITCUOSFEISMI 1.28 0.05 1667 386 -7.14 5.92 1.75 1.79 0.12 7.58 2.50 154 36 SS 81  AICOCITSCUOSFENI 1.28 0.05 1698 410 -7.56 5.90 1.75 1.78 0.12 7.42 2.53 153 36 SS 81  AICOCITSCUOSFENI 1.28 0.05 1664 385 -7.83 6.05 1.75 1.80 0.12 7.67 2.53 154 37 SS 81  COCITCUENITIOS 1.28 0.05 1664 385 -7.83 6.05 1.75 1.80 0.12 7.67 2.53 154 37 SS 81  COCITCUENITIOS 1.28 0.05 1630 392 -4.78 6.31 1.79 1.80 0.12 7.83 2.67 151 36 IM+SS 114  CUSSINIAICOCITE 1.28 0.06 1654 401 -7.93 6.18 1.77 1.79 0.12 7.55 2.61 152 38 AM 115  AICOSCICUESFENI 1.29 0.06 1643 419 -7.92 6.26 1.75 1.78 0.12 7.40 2.69 149 38 SS 81  AICOCITCUESFENI 1.29 0.05 1613 406 -5.55 6.49 1.77 1.80 0.12 7.82 2.79 149 37 SS 84  COCITCUESFENI 1.29 0.06 1602 382 -8.32 6.47 1.75 1.80 0.12 7.70 2.69 151 39 SS 81  AICOCITSCUOSFENI 1.29 0.06 1602 382 -8.32 6.47 1.75 1.80 0.12 7.70 2.69 151 39 SS 81  AICOCITSCUOSFENI 1.29 0.06 1647 419 -7.28 6.09 1.75 1.78 0.12 7.70 2.69 151 39 SS 81  AICOCITSCUOSFENI 1.29 0.06 1677 411 -6.24 6.53 1.79 1.79 0.12 7.60 2.80 147 39 SS 81  COCITCUESFENI 1.29 0.05 1627 364 -3.31 5.98 1.77 1.75 0.14 7.68 2.44 145 33 SS 81  AICOCITSCUOSFENI 1.29 0.06 1795 411 -6.24 6.53 1.79 1.79 0.12 7.60 2.80 147 39 SS 81  AICOCITSCUOSFENI 1.29 0.05 1627 364 -3.31 5.98 1.77 1.75 0.14 7.68 2.44 145 33 SS 81  AICOCITSCUOSFENI 1.29 0.05 1597 411 -6.24 6.53 1.79 1.79 0.12 7.60 2.80 147 39 SS 83  AICOCITSCUOSFENI 1.29 0.05 1597 411 -6.24 6.53 1.79 1.79 0.12 7.60 2.80 147 39 SS 83  AICOCITSCUOSFENI 1.29 0.05 1597 411 -6.24 6.53 1.79 1.79 0.12 7.60 2.80 147 39 SS 83  AICOCITSCUOSFENI 1.29 0.05 1597 411 -6.24 6.53 1.79 1.79 0.12 7.60 2.80 147 39 SS 83  AICOCITSCUOSFENI 1.29 0.05 1597 411 -6.24 6.53 1.79 1.79 0.12 7.60 2.80 147 39 SS 83  AICOCITSCUOSFENI 1.29 0.05 1597 411 -6.24 6.53 1.79 1.79 0.12 7.60 2.80 147 39 SS 83  AICOCITSCUOSFENI 1.29 0.05 1597 411 -6.24 6.53 1.79 1.79 0.12 7.60 2.80 147 39 IMHSS 85  AICOCITSCUOSFENI 1.29 0.05 1591 367 -1.74 6.11 1.77 1.76 0.14 7.92 2.60 143 32 SS 88  AICOCITSCUOSFENI 1.29 0.05 1591 367 -1.74 6.11 1.77 1.76 0.14 7.92 2.60	AlCoCr <sub>2</sub> Cu <sub>0.5</sub> FeNi	1.28	0.05	1735	414	-7.20	5.64	1.71	1.77	0.12	7.31	2.46	153	35	SS	81
AICOCITICAL PRINTING 1.28 0.05 1698 410 -7.56 5.90 1.75 1.78 0.12 7.42 2.53 153 36 SS 81 AICOCITICAL PRINTING 1.28 0.05 1664 385 -7.83 6.05 1.75 1.80 0.12 7.67 2.53 154 37 SS 81 COCITICAL PRINTING 1.28 0.05 1664 385 -7.83 6.05 1.75 1.80 0.12 7.67 2.53 154 37 SS 81 COCITICAL 1.28 0.05 1630 392 4.78 6.31 1.79 1.80 0.12 7.83 2.67 151 36 IM+SS 114 CUBSHAILOCITE 1.28 0.06 1654 401 -7.93 6.18 1.77 1.79 0.12 7.55 2.61 152 38 AM 115 AICOCITICAL 1.29 0.06 1643 419 -7.92 6.26 1.75 1.78 0.12 7.80 2.79 149 37 SS 81 AICOCITICAL 1.29 0.06 1643 419 -7.92 6.26 1.75 1.78 0.12 7.80 2.79 149 37 SS 81 AICOCITICAL 1.29 0.06 1602 382 -8.32 6.47 1.75 1.80 0.12 7.80 2.69 149 38 SS 81 AICOCITICAL 1.29 0.06 1602 382 -8.32 6.47 1.75 1.80 0.12 7.70 2.69 151 39 SS 81 AICOCITICAL 1.29 0.06 1647 419 -7.28 6.09 1.75 1.78 0.12 7.70 2.69 151 39 SS 81 AICOCITICAL 1.29 0.06 1678 247 8.84 8.58 1.79 1.79 0.12 7.50 2.61 149 38 SS 81 AICOCITICAL 1.29 0.06 1597 411 -6.24 6.53 1.79 1.79 0.12 7.60 2.80 147 39 SS 97 AIBOCITICAL 1.29 0.05 1627 364 -3.31 5.98 1.77 1.75 0.14 7.68 2.44 145 33 SS 97 AIBOCITICAL 1.29 0.05 1627 364 -3.31 5.98 1.77 1.75 0.14 7.68 2.44 145 33 SS 97 AIBOCITICAL 1.29 0.05 1591 367 -1.74 6.11 1.77 1.75 0.14 7.68 2.44 145 33 SS 97 AIBOCITICAL 1.29 0.05 1591 367 -1.74 6.11 1.77 1.75 0.14 7.68 2.44 145 33 SS 97 AIBOCITICAL 1.29 0.05 1591 367 -1.74 6.11 1.77 1.75 0.14 7.68 2.44 145 33 SS 97 AIBOCITICAL 1.29 0.05 1591 367 -1.74 6.11 1.77 1.75 0.14 7.68 2.44 145 33 SS 97 AIBOCITICAL 1.29 0.05 1591 367 -1.74 6.11 1.77 1.75 0.14 7.92 2.60 143 32 SS 97 AIBOCITICAL 1.29 0.05 1591 367 -1.74 6.11 1.77 1.76 0.14 7.92 2.60 143 32 SS 97 AIBOCITICAL 1.29 0.05 1591 367 -1.74 6.11 1.77 1.76 0.14 7.92 2.60 143 32 SS 97 AIBOCITICAL 1.29 0.05 1591 367 -1.74 6.11 1.77 1.76 0.14 7.92 2.60 143 32 SS 97 AIBOCITICAL 1.29 0.05 1591 367 -1.74 6.11 1.77 1.76 0.14 7.92 2.60 143 32 SS 97 AIBOCITICAL 1.29 0.05 1591 367 -1.74 6.11 1.77 1.76 0.14 7.92 2.60 143 32 SS 97 AIBOCITICAL 1.29 0.05 1591 367 -1.74 6.11 1.77 1.76 0.14 7.92 2.60 143 32 SS 97 AIBOCITICAL 1.29 0	AlCo <sub>2</sub> CrCu <sub>0.5</sub> FeNi	1.28	0.05	1672	371	-7.67	5.91	1.71	1.80	0.12	7.77	2.45	156	36	SS	81
AICOLISCRUIDSFENI 1.28 0.05 1664 385 -7.83 6.05 1.75 1.80 0.12 7.67 2.53 154 37 SS 81 COCTCUFENITIOS 1.28 0.06 1793 250 -6.75 8.18 1.79 1.80 0.13 8.14 2.30 158 24 IM+SS 113 FECONICTAICU 1.28 0.05 1630 392 -4.78 6.31 1.79 1.80 0.12 7.83 2.67 151 36 IM+SS 114 CU <sub>0.5</sub> NIAICOCTFE 1.28 0.06 1654 401 -7.93 6.18 1.77 1.79 0.12 7.55 2.61 152 38 AM 115 AICOCTCUGSFENI 1.29 0.06 1643 419 -7.92 6.26 1.75 1.78 0.12 7.40 2.69 149 38 SS 81 AICOCTCUGSFENI 1.29 0.05 1613 406 -5.55 6.49 1.77 1.80 0.12 7.82 2.79 149 37 SS 66 COCTFENIAINDO.1 1.29 0.06 1602 382 -8.32 6.47 1.75 1.80 0.12 7.70 2.69 151 39 SS 81 AICOCTCUGSFENI 1.29 0.06 1647 419 -7.28 6.09 1.75 1.78 0.12 7.70 2.69 151 39 SS 81 AICOCTCUGSFENI 1.29 0.06 1647 419 -7.28 6.09 1.75 1.78 0.12 7.70 2.69 151 39 SS 81 AICOCTCUGSFENI 1.29 0.06 1647 419 -7.28 6.09 1.75 1.78 0.12 7.70 2.69 151 39 SS 81 AICOCTCUGSFENI 1.29 0.06 1647 419 -7.28 6.09 1.75 1.78 0.12 7.70 2.69 151 39 SS 81 AICOCTCUGSFENI 1.29 0.06 1597 411 -6.24 6.53 1.79 1.79 0.14 8.00 2.38 157 25 IM+SS 113 CUCONICTAIL3FE 1.29 0.06 1597 411 -6.24 6.53 1.79 1.79 0.14 8.00 2.38 157 25 IM+SS 113 CUCONICTAIL3FE 1.29 0.05 1627 364 -3.31 5.98 1.77 1.75 0.14 7.68 2.44 145 33 SS 88 AICOCTGEDSNI 1.29 0.05 1591 367 -1.74 6.11 1.77 1.75 0.14 7.68 2.44 145 33 SS 88 AICOCTGEDSNI 1.29 0.05 1591 367 -1.74 6.11 1.77 1.76 0.14 7.92 2.60 143 32 SS 88 AICOCTGEDSNI 1.29 0.05 1591 367 -1.74 6.11 1.77 1.76 0.14 7.92 2.60 143 32 SS 88 AICOCTGEDSNI 1.29 0.05 1591 367 -1.74 6.11 1.77 1.76 0.14 7.92 2.60 143 32 SS 88 AICOCTGUALS NI 1.29 0.05 1591 367 -1.74 6.11 1.77 1.76 0.14 7.92 2.60 143 32 SS 88 AICOCTGUALS NI 1.29 0.05 1591 367 -1.74 6.11 1.77 1.76 0.14 7.92 2.60 143 32 SS 88 AICOCTGUALS NI 1.29 0.05 1591 367 -1.74 6.11 1.77 1.76 0.14 7.92 2.60 143 32 SS 88 AICOCTGUALS NI 1.29 0.05 1591 367 -1.74 6.11 1.77 1.76 0.14 7.92 2.60 143 32 SS 88 AICOCTGUALS NI 1.29 0.05 1591 367 -1.74 6.11 1.77 1.76 0.14 7.92 2.60 143 32 SS 88 AICOCTGUALS NI 1.29 0.05 1591 367 -1.74 6.11 1.77 1.76 0.14 7.92 2.60 143 32 SS 88 AICOCTGUALS NI 1.29 0.05 1591 367 -1.74	AlCoCrCu <sub>0.5</sub> Fe <sub>1.5</sub> Ni	1.28	0.05	1667	386	-7.14	5.92	1.75	1.79	0.12	7.58	2.50	154	36	SS	81
COCTCUFENITIOB  1.28 0.06 1793 250 -6.75 8.18 1.79 1.80 0.12 7.83 2.60 158 24 IM+SS 113  FECONICTAICU 1.28 0.05 1630 392 -4.78 6.31 1.79 1.80 0.12 7.83 2.67 151 36 IM+SS 114  Cubshialcocyfe 1.28 0.06 1654 401 -7.93 6.18 1.77 1.79 0.12 7.55 2.61 152 38 AM 115  AICODSCYCUDSFENI 1.29 0.06 1643 419 -7.92 6.26 1.75 1.78 0.12 7.40 2.69 149 38 SS 81  AICOCYCUFEOSNI 1.29 0.05 1613 406 -5.55 6.49 1.77 1.80 0.12 7.82 2.79 149 37 SS 58  COCYFENIAINDD 1 1.29 0.06 1705 431 -13.32 5.91 1.67 1.77 0.12 7.16 2.48 154 39 SS 42  AICOCYCUDSFENI 1.29 0.06 1602 382 -8.32 6.47 1.75 1.80 0.12 7.70 2.69 151 39 SS 81  AICOCYCUSFENI 1.29 0.06 1647 419 -7.28 6.09 1.75 1.78 0.12 7.70 2.69 151 39 SS 81  COCYCUPENITI 1.29 0.06 1597 411 -6.24 6.53 1.79 1.79 0.14 8.00 2.38 157 25 IM+SS 113  CUCONICYALISFE 1.29 0.06 1597 411 -6.24 6.53 1.79 1.79 0.12 7.60 2.80 147 39 SS 57  AIOSCYCUPSINI 1.29 0.05 1591 367 -1.74 6.11 1.77 1.75 0.14 7.68 2.44 145 33 SS 68  AICOCYCUSFENINI 1.29 0.05 1591 367 -1.74 6.11 1.77 1.75 0.14 7.92 2.60 143 32 SS 68  FECONICYCUALIS FENINI 1.29 0.05 1591 367 -1.74 6.11 1.77 1.76 0.14 7.92 2.60 143 32 SS 68  FECONICYCUALIS FENINI 1.29 0.05 1591 367 -1.74 6.11 1.77 1.76 0.14 7.92 2.60 143 32 SS 68  ECOCYCUPLIS FENINI 1.29 0.05 1591 367 -1.74 6.11 1.77 1.76 0.14 7.92 2.60 143 32 SS 68  AICOCYCULIS FENINI 1.29 0.05 1591 367 -1.74 6.11 1.77 1.76 0.14 7.92 2.60 143 32 SS 68  AICOCYCULIS FENINI 1.29 0.05 1591 367 -1.74 6.11 1.77 1.76 0.14 7.92 2.60 143 32 SS 68  AICOCYCULIS FENINI 1.29 0.05 1591 367 -1.74 6.11 1.77 1.76 0.14 7.92 2.60 143 32 SS 68	AlCoCr <sub>1.5</sub> Cu <sub>0.5</sub> FeNi	1.28	0.05	1698	410	-7.56	5.90	1.75	1.78	0.12	7.42	2.53	153	36	SS	81
FeCONICrAICU 1.28 0.05 1630 392 -4.78 6.31 1.79 1.80 0.12 7.83 2.67 151 36 IM+SS 114 CuashiAlcocree 1.28 0.06 1654 401 -7.93 6.18 1.77 1.79 0.12 7.55 2.61 152 38 AM 1155 AICOCrCuGaseni 1.29 0.06 1643 419 -7.92 6.26 1.75 1.78 0.12 7.40 2.69 149 38 SS 81 AICOCrCuGaseni 1.29 0.05 1613 406 -5.55 6.49 1.77 1.80 0.12 7.82 2.79 149 37 SS 56 Cocreenialnotal 1.29 0.06 1705 431 -13.32 5.91 1.67 1.77 0.12 7.16 2.48 154 39 SS 42 AICOCrCuGaseni 1.29 0.06 1602 382 -8.32 6.47 1.75 1.80 0.12 7.70 2.69 151 39 SS 81 AICOCrCuGaseni 1.29 0.06 1602 382 -8.32 6.47 1.75 1.80 0.12 7.70 2.69 151 39 SS 81 AICOCrCuGaseni 1.29 0.06 1604 419 -7.28 6.09 1.75 1.78 0.12 7.30 2.61 149 38 SS 81 Cocrcuenti 1.29 0.06 1597 411 -6.24 6.53 1.79 1.79 0.14 8.00 2.38 157 25 IM+SS 133 Cuconicrolaliase 1.29 0.06 1597 411 -6.24 6.53 1.79 1.79 0.14 8.00 2.38 157 25 IM+SS 133 AIGOCrCuGaseni 1.29 0.06 1735 459 -14.66 6.41 1.72 1.77 0.12 7.10 2.47 154 39 IM+SS 57 AIGCCCuaseni 1.29 0.05 1597 411 -6.24 6.53 1.79 1.79 0.12 7.60 2.80 147 39 SS 57 AIGCCCUGaseni 1.29 0.05 1597 411 -6.24 6.53 1.79 1.79 0.12 7.60 2.80 147 39 SS 57 AIGCCCUGaseni 1.29 0.05 1597 364 -3.31 5.98 1.77 1.75 0.14 7.68 2.44 145 33 SS 68 AIGCCCUGaseni 1.29 0.05 1597 364 -3.31 5.98 1.77 1.75 0.14 7.68 2.44 145 33 SS 68 AIGCCCUGaseni 1.29 0.05 1591 367 -1.74 6.11 1.77 1.76 0.14 7.92 2.60 143 32 SS 68 AIGCCCUGASENI 1.29 0.05 1591 367 -1.74 6.11 1.77 1.76 0.14 7.92 2.60 143 32 SS 68 AIGCCCUGASENI 1.29 0.05 1591 367 -1.74 6.11 1.77 1.76 0.14 7.92 2.60 143 32 SS 68 AIGCCCUGASENI 1.29 0.05 1591 367 -1.74 6.11 1.77 1.76 0.14 7.92 2.60 143 32 SS 68 AIGCCCUGASENI 1.29 0.05 1591 367 -1.74 6.11 1.77 1.76 0.14 7.92 2.60 143 32 SS 68 AIGCCCUGASENI 1.29 0.05 1591 367 -1.74 6.11 1.77 1.76 0.14 7.92 2.60 143 32 SS 68 AIGCCCUGASENI 1.29 0.05 1591 367 -1.74 6.11 1.77 1.76 0.14 7.92 2.60 143 32 SS 68 AIGCCCUGANICALIS 1.29 0.05 1591 367 -1.74 6.11 1.77 1.76 0.14 7.92 2.60 143 32 SS 68 AIGCCCUGANICALIS 1.29 0.05 1591 367 -1.74 6.11 1.77 1.76 0.14 7.92 2.60 143 32 SS 68 AIGCCCUGANICALIS 1.29 0.06 1576 420 -7.05 6.63	AlCo <sub>1.5</sub> CrCu <sub>0.5</sub> FeNi	1.28	0.05	1664	385	-7.83	6.05	1.75	1.80	0.12	7.67	2.53	154	37	SS	81
Cuo_sNiAlCocrfe	CoCrCuFeNiTi <sub>0.8</sub>	1.28	0.06	1793	250	-6.75	8.18	1.79	1.80	0.13	8.14	2.30	158	24	IM+SS	113
AlCo <sub>0.5</sub> CrCu <sub>0.5</sub> FeNi 1.29 0.06 1643 419 -7.92 6.26 1.75 1.78 0.12 7.40 2.69 149 38 SS 81  AlCo <sub>0.5</sub> CrCu <sub>0.5</sub> FeNi 1.29 0.05 1613 406 -5.55 6.49 1.77 1.80 0.12 7.82 2.79 149 37 SS 56  CoCrFeNiAlNb <sub>0.1</sub> 1.29 0.06 1705 431 -13.32 5.91 1.67 1.77 0.12 7.16 2.48 154 39 SS 81  AlCoCr <sub>0.5</sub> Cu <sub>0.5</sub> FeNi 1.29 0.06 1602 382 -8.32 6.47 1.75 1.80 0.12 7.70 2.69 151 39 SS 81  AlCoCr <sub>0.5</sub> Cu <sub>0.5</sub> FeNi <sub>0.5</sub> 1.29 0.06 1647 419 -7.28 6.09 1.75 1.78 0.12 7.30 2.61 149 38 SS 81  CoCr <sub>0.5</sub> Cr <sub>0.5</sub> CeNi <sub>0.5</sub> 1.29 0.06 1798 247 -8.44 8.58 1.79 1.79 0.14 8.00 2.38 157 25 IM+SS 113  CuCoNiCrAl <sub>1.5</sub> Fe 1.29 0.06 1597 411 -6.24 6.53 1.79 1.79 0.12 7.60 2.80 147 39 SS 57  Al <sub>0.5</sub> Cr <sub>0.5</sub> Cr <sub>0.5</sub> Min 1.29 0.06 1735 459 -14.66 6.41 1.72 1.77 0.12 7.10 2.47 154 39 IM+SS 57  Al <sub>0.5</sub> Cr <sub>0.5</sub> Cr <sub>0.5</sub> CeNi <sub>0.5</sub> Ni 1.29 0.06 1576 420 -7.05 6.63 1.78 1.78 0.12 7.46 2.87 145 40 SS 110	FeCoNiCrAlCu	1.28	0.05	1630	392	-4.78	6.31	1.79	1.80	0.12	7.83	2.67	151	36	IM+SS	114
AICOCPCUFENIAINDO.1  AICOCPCUOSFENIO 1.29 0.05 1613 406 -5.55 6.49 1.77 1.80 0.12 7.82 2.79 149 37 SS 56  COCPFENIAINDO.1  AICOCPCOSCUOSFENIO 1.29 0.06 1705 431 -13.32 5.91 1.67 1.77 0.12 7.16 2.48 154 39 SS 42  AICOCPCSCUOSFENIO 1.29 0.06 1602 382 -8.32 6.47 1.75 1.80 0.12 7.70 2.69 151 39 SS 81  AICOCPCUOSFENIO 1.29 0.06 1647 419 -7.28 6.09 1.75 1.78 0.12 7.30 2.61 149 38 SS 81  COCPCUFENITI 1.29 0.06 1798 247 -8.44 8.58 1.79 1.79 0.14 8.00 2.38 157 25 IMH-SS 113  CUCONICPAIL3FE 1.29 0.06 1597 411 -6.24 6.53 1.79 1.79 0.12 7.60 2.80 147 39 SS 57  AlosCPCUFENIONI 1.29 0.05 1627 364 -3.31 5.98 1.77 1.75 0.14 7.68 2.44 145 33 SS 68  AICOCPFENDO.25NI 1.29 0.06 1735 459 -14.66 6.41 1.72 1.77 0.12 7.10 2.47 154 39 IMH-SS 57  AlosCPCUISFEMINNI 1.29 0.05 1591 367 -1.74 6.11 1.77 1.76 0.14 7.92 2.60 143 32 SS 68  FECONICPCUALIS 1.29 0.06 1576 420 -7.05 6.63 1.78 1.78 0.12 7.46 2.87 145 40 SS 110	Cu <sub>0.5</sub> NiAlCoCrFe	1.28	0.06	1654	401	-7.93	6.18	1.77	1.79	0.12	7.55	2.61	152	38	AM	115
CocrfeNiAlNb <sub>0.1</sub> 1.29	AlCo <sub>0.5</sub> CrCu <sub>0.5</sub> FeNi	1.29	0.06	1643	419	-7.92	6.26	1.75	1.78	0.12	7.40	2.69	149	38	SS	81
AlCoCr <sub>0.5</sub> Cu <sub>0.5</sub> FeNi 1.29 0.06 1602 382 -8.32 6.47 1.75 1.80 0.12 7.70 2.69 151 39 SS 81  AlCoCr <sub>0.5</sub> Cu <sub>0.5</sub> FeNi <sub>0.5</sub> 1.29 0.06 1647 419 -7.28 6.09 1.75 1.78 0.12 7.30 2.61 149 38 SS 81  CoCrCuFeNiTi 1.29 0.06 1798 247 -8.44 8.58 1.79 1.79 0.14 8.00 2.38 157 25 IM+SS 113  CuCoNiCrAl <sub>1.3</sub> Fe 1.29 0.06 1597 411 -6.24 6.53 1.79 1.79 0.12 7.60 2.80 147 39 SS 57  Al <sub>0.5</sub> CrCuFe <sub>1.5</sub> MnNi 1.29 0.05 1627 364 -3.31 5.98 1.77 1.75 0.14 7.68 2.44 145 33 SS 68  AlCoCrFeNb <sub>0.25</sub> Ni 1.29 0.06 1735 459 -14.66 6.41 1.72 1.77 0.12 7.10 2.47 154 39 IM+SS 57  Al <sub>0.5</sub> CrCu <sub>1.5</sub> FeMnNi 1.29 0.05 1591 367 -1.74 6.11 1.77 1.76 0.14 7.92 2.60 143 32 SS 68  FeCoNiCrCuAl <sub>1.5</sub> Fe MnNi 1.29 0.06 1576 420 -7.05 6.63 1.78 1.78 0.12 7.46 2.87 145 40 SS 110	AlCoCrCuFe <sub>0.5</sub> Ni	1.29	0.05	1613	406	-5.55	6.49	1.77	1.80	0.12	7.82	2.79	149	37	SS	56
AlCoCrCuosFeNios 1.29 0.06 1647 419 -7.28 6.09 1.75 1.78 0.12 7.30 2.61 149 38 SS 81 COCrCuFeNiTi 1.29 0.06 1798 247 -8.44 8.58 1.79 1.79 0.14 8.00 2.38 157 25 IM+SS 113 CuCoNiCrAl <sub>1.3</sub> Fe 1.29 0.06 1597 411 -6.24 6.53 1.79 1.79 0.12 7.60 2.80 147 39 SS 57 Al <sub>0.8</sub> CrCuFe <sub>1.5</sub> MnNi 1.29 0.05 1627 364 -3.31 5.98 1.77 1.75 0.14 7.68 2.44 145 33 SS 68 AlCoCrFeNb <sub>0.25</sub> Ni 1.29 0.06 1735 459 -14.66 6.41 1.72 1.77 0.12 7.10 2.47 154 39 IM+SS 77 Al <sub>0.8</sub> CrCu <sub>1.5</sub> FeMnNi 1.29 0.05 1591 367 -1.74 6.11 1.77 1.76 0.14 7.92 2.60 143 32 SS 68 FeCoNiCrCuAl <sub>1.5</sub> 1.29 0.06 1576 420 -7.05 6.63 1.78 1.78 0.12 7.46 2.87 145 40 SS 110 Ct.	CoCrFeNiAlNb <sub>0.1</sub>	1.29	0.06	1705	431	-13.32	5.91	1.67	1.77	0.12	7.16	2.48	154	39	SS	42
COCrCuFeniti 1.29 0.06 1798 247 -8.44 8.58 1.79 1.79 0.14 8.00 2.38 157 25 IM+SS 113 CuCoNiCrAl <sub>1.3</sub> Fe 1.29 0.06 1597 411 -6.24 6.53 1.79 1.79 0.12 7.60 2.80 147 39 SS 57 Al <sub>0.8</sub> CrCuFe <sub>1.5</sub> MnNi 1.29 0.05 1627 364 -3.31 5.98 1.77 1.75 0.14 7.68 2.44 145 33 SS 68 AlCoCrFeNb <sub>0.25</sub> Ni 1.29 0.06 1735 459 -14.66 6.41 1.72 1.77 0.12 7.10 2.47 154 39 IM+SS 57 Al <sub>0.8</sub> CrCu <sub>1.5</sub> FeMnNi 1.29 0.05 1591 367 -1.74 6.11 1.77 1.76 0.14 7.92 2.60 143 32 SS 68 FeCoNiCrCuAl <sub>1.5</sub> 1.29 0.06 1576 420 -7.05 6.63 1.78 1.78 0.12 7.46 2.87 145 40 SS 110 Corrections of the control of	AlCoCr <sub>0.5</sub> Cu <sub>0.5</sub> FeNi	1.29	0.06	1602	382	-8.32	6.47	1.75	1.80	0.12	7.70	2.69	151	39	SS	81
CuCoNiCrAl <sub>13</sub> Fe 1.29 0.06 1597 411 -6.24 6.53 1.79 1.79 0.12 7.60 2.80 147 39 SS <sup>57</sup> Al <sub>0.8</sub> CrCuFe <sub>1.5</sub> MnNi 1.29 0.05 1627 364 -3.31 5.98 1.77 1.75 0.14 7.68 2.44 145 33 SS <sup>68</sup> AlCoCrFeNb <sub>0.25</sub> Ni 1.29 0.06 1735 459 -14.66 6.41 1.72 1.77 0.12 7.10 2.47 154 39 IM+SS <sup>57</sup> Al <sub>0.8</sub> CrCu <sub>1.5</sub> FeMnNi 1.29 0.05 1591 367 -1.74 6.11 1.77 1.76 0.14 7.92 2.60 143 32 SS <sup>68</sup> FeCoNiCrCuAl <sub>1.5</sub> 1.29 0.06 1576 420 -7.05 6.63 1.78 1.78 0.12 7.46 2.87 145 40 SS <sup>110</sup>	AlCoCrCu <sub>0.5</sub> FeNi <sub>0.5</sub>	1.29	0.06	1647	419	-7.28	6.09	1.75	1.78	0.12	7.30	2.61	149	38	SS	81
Al <sub>0.8</sub> CrCuFe <sub>1.5</sub> MnNi 1.29 0.05 1627 364 -3.31 5.98 1.77 1.75 0.14 7.68 2.44 145 33 SS <sup>68</sup> AlCoCrFeNb <sub>0.25</sub> Ni 1.29 0.06 1735 459 -14.66 6.41 1.72 1.77 0.12 7.10 2.47 154 39 IM+SS <sup>57</sup> Al <sub>0.8</sub> CrCu <sub>1.5</sub> FeMnNi 1.29 0.05 1591 367 -1.74 6.11 1.77 1.76 0.14 7.92 2.60 143 32 SS <sup>68</sup> FeCoNiCrCuAl <sub>1.5</sub> 1.29 0.06 1576 420 -7.05 6.63 1.78 1.78 0.12 7.46 2.87 145 40 SS <sup>110</sup>	CoCrCuFeNiTi	1.29	0.06	1798	247	-8.44	8.58	1.79	1.79	0.14	8.00	2.38	157	25	IM+SS	113
Alcocreeismin 1.29 0.06 1735 459 -14.66 6.41 1.72 1.77 0.12 7.10 2.47 154 39 IM+SS 57  Alos Crcu <sub>1.5</sub> FeMnNi 1.29 0.05 1591 367 -1.74 6.11 1.77 1.76 0.14 7.92 2.60 143 32 SS 68  FeConicrcual <sub>1.5</sub> 1.29 0.06 1576 420 -7.05 6.63 1.78 1.78 0.12 7.46 2.87 145 40 SS 110	CuCoNiCrAl <sub>1.3</sub> Fe	1.29	0.06	1597	411	-6.24	6.53	1.79	1.79	0.12	7.60	2.80	147	39	SS	57
Al <sub>0.8</sub> CrCu <sub>1.5</sub> FeMnNi 1.29 0.05 1591 367 -1.74 6.11 1.77 1.76 0.14 7.92 2.60 143 32 SS <sup>68</sup> FeCoNiCrCuAl <sub>1.5</sub> 1.29 0.06 1576 420 -7.05 6.63 1.78 1.78 0.12 7.46 2.87 145 40 SS <sup>110</sup>	Al <sub>0.8</sub> CrCuFe <sub>1.5</sub> MnNi	1.29	0.05	1627	364	-3.31	5.98	1.77	1.75	0.14	7.68	2.44	145	33	SS	68
FeCoNiCrCuAl <sub>1.5</sub> 1.29 0.06 1576 420 -7.05 6.63 1.78 1.78 0.12 7.46 2.87 145 40 SS <sup>110</sup>	AlCoCrFeNb <sub>0.25</sub> Ni	1.29	0.06	1735	459	-14.66	6.41	1.72	1.77	0.12	7.10	2.47	154	39	IM+SS	57
125 0.00 1570 420 -7.05 0.05 1.70 1.70 0.12 7.40 2.07 143 40 35	Al <sub>0.8</sub> CrCu <sub>1.5</sub> FeMnNi	1.29	0.05	1591	367	-1.74	6.11	1.77	1.76	0.14	7.92	2.60	143	32	SS	68
NbCrFeMnCoNi 1.29 0.05 1959 404 -12.00 6.62 1.79 1.74 0.14 7.50 1.71 163 21 IM+SS <sup>64</sup>	FeCoNiCrCuAl <sub>1.5</sub>	1.29	0.06	1576	420	-7.05	6.63	1.78	1.78	0.12	7.46	2.87	145	40	SS	110
	NbCrFeMnCoNi	1.29	0.05	1959	404	-12.00	6.62	1.79	1.74	0.14	7.50	1.71	163	21	IM+SS	64

Al <sub>1.5</sub> CoCrCu <sub>0.5</sub> FeNi 1.30 0.06 1594 432 -10.14 6.50 1.75 1.77 0.13 7.17 2.79 146 42	S 81
CoCrFeNiAlNb <sub>0.5</sub> 1.30 0.06 1781 496 -16.53 7.03 1.77 1.76 0.13 7.00 2.45 155 38 IN	+SS <sup>42</sup>
Al <sub>0.8</sub> CrCuFeMn <sub>1.5</sub> Ni 1.30 0.05 1603 361 -4.23 6.03 1.77 1.73 0.15 7.60 2.44 141 33	S <sup>68</sup>
AlCrCuFeMnNi 1.30 0.05 1588 389 -5.11 6.36 1.79 1.74 0.14 7.50 2.63 141 35	S 68
TiCrFeMnCoNi 1.30 0.06 1825 202 -13.44 7.51 1.79 1.73 0.15 7.33 1.97 153 28 IN	+SS <sup>64</sup>
CuCoNiCrAl <sub>1.8</sub> Fe 1.30 0.06 1548 431 -8.08 6.72 1.76 1.78 0.13 7.26 2.95 142 42	S 57
CoCrFeNiAlNb <sub>0.75</sub> 1.30 0.07 1823 523 -18.03 7.48 1.79 1.75 0.13 6.91 2.43 155 37 IN	+SS <sup>42</sup>
FeCoNiCrCuAl <sub>2.0</sub> 1.30 0.06 1530 437 -8.65 6.75 1.75 1.77 0.13 7.14 3.00 140 43	S 110
Al <sub>2</sub> CoCrCu <sub>0.5</sub> FeNi 1.31 0.06 1544 451 -11.60 6.58 1.71 1.76 0.13 6.85 2.90 140 44	S 81
FeCoNiCrCuAl <sub>2.3</sub> 1.31 0.06 1506 444 -9.38 6.76 1.73 1.76 0.13 6.97 3.05 138 44	S 110
CoCrCuFeNiZr 1.31 0.10 1829 274 -14.44 12.01 1.79 1.75 0.21 8.00 2.38 150 38 AN	+IM 82
CuCoNiCrAl₂₅Fe 1.31 0.06 1490 448 -9.78 6.75 1.71 1.76 0.13 6.87 3.07 136 44	S 57
Ti <sub>2</sub> CrCuFeCoNi 1.31 0.07 1818 234 -14.04 9.48 1.75 1.75 0.15 7.43 2.61 150 28 I	νI 63
CoCrCuFeNiTi <sub>2</sub> 1.31 0.07 1818 234 -14.04 9.48 1.75 1.75 0.15 7.43 2.61 150 28 AN	+IM 63
Ti <sub>2</sub> CrCuFeCoNi 1.31 0.07 1818 234 -14.04 9.48 1.75 1.75 0.15 7.43 2.61 150 28 IN	+SS <sup>63</sup>
AlCoCrFeNiTi 1.31 0.07 1727 385 -21.56 9.11 1.79 1.74 0.14 6.67 2.56 146 39 IN	+SS 116
FeCoNiCrCuAl <sub>2.8</sub> 1.32 0.07 1469 452 -10.28 6.72 1.68 1.75 0.13 6.72 3.10 134 45	S 110
AlCrCuFeNiTi 1.32 0.07 1659 407 -13.67 9.24 1.79 1.74 0.14 7.00 2.94 139 36	S 117
FeCoNiCrCuAl <sub>3</sub> 1.32 0.07 1456 454 -10.56 6.68 1.67 1.75 0.13 6.63 3.12 132 45	S 110
AlCocrFeNiTi <sub>1.5</sub> 1.32 0.08 1743 374 -23.91 9.65 1.78 1.72 0.15 6.46 2.56 143 39 IN	+SS 116
AlcoCrFeNiZr 1.34 0.10 1758 408 -27.56 12.52 1.79 1.70 0.20 6.67 2.56 139 47 Alv	+IM 82
BeCuNiTivZr 1.34 0.12 1816 297 -24.89 12.68 1.79 1.65 0.20 6.00 3.32 132 35 AN	+IM 63
Ti <sub>50</sub> Ni <sub>24</sub> Cu <sub>20</sub> BSi <sub>2</sub> Sn <sub>3</sub> 1.37 0.09 1729 314 -25.96 10.79 1.24 1.73 0.19 6.83 3.23 133 37	M 3
Ti <sub>45</sub> Cu <sub>25</sub> Ni <sub>15</sub> Sn <sub>3</sub> Be <sub>7</sub> Zr <sub>5</sub> 1.37 0.09 1703 330 -21.20 9.76 1.43 1.69 0.20 6.51 3.41 126 30 A	M 85
Ni <sub>39.8</sub> Cu <sub>5.97</sub> Ti <sub>15.92</sub> Zr <sub>29.86</sub> Al <sub>9.95</sub> Si <sub>0.5</sub> 1.40 0.11 1779 348 -43.73 14.14 1.44 1.65 0.25 6.65 3.16 124 48	M 14
AlCrMoTaTiZr 1.42 0.07 2228 747 -16.11 8.93 1.79 1.63 0.26 4.67 1.11 141 60	M 118
CrMo <sub>0.5</sub> NbTa <sub>0.5</sub> TiZr 1.43 0.08 2418 441 -4.92 3.39 1.75 1.59 0.22 4.90 0.83 145 50 IN	+SS 119
ZrHfTiAlCuNi 1.43 0.09 1766 512 -34.11 14.58 1.79 1.60 0.24 6.00 3.21 114 37 IN	+SS 120
AlMo <sub>0.5</sub> NbTa <sub>0.5</sub> TiZr 1.46 0.05 2169 750 -16.84 10.56 1.75 1.58 0.22 4.30 0.90 128 56 IN	+SS <sup>121</sup>
Al <sub>0.5</sub> NbTa <sub>0.8</sub> Ti <sub>1.5</sub> V <sub>0.2</sub> Zr 1.47 0.05 2265 654 -8.62 8.53 1.66 1.51 0.10 4.30 0.64 127 47	S <sup>96</sup>
Al <sub>0.3</sub> NbTa <sub>0.8</sub> Ti <sub>1.4</sub> V <sub>0.2</sub> Zr <sub>1.3</sub> 1.48 0.05 2316 594 -4.86 7.24 1.62 1.50 0.11 4.34 0.59 126 48	S <sup>96</sup>
Al <sub>0.4</sub> Hf <sub>0.6</sub> NbTaTiZr 1.49 0.05 2397 643 -6.33 8.31 1.74 1.48 0.12 4.32 0.61 129 49	S 121
Mg <sub>65</sub> Cu <sub>7.5</sub> Ni <sub>7.5</sub> Zn <sub>5</sub> Ag <sub>5</sub> Y <sub>10</sub> 1.55 0.10 1108 336 -7.35 4.04 1.20 1.44 0.25 4.33 3.82 66 42	M 122
SrCaYbMgZnCu         1.68         0.18         1038         202         -13.11         6.15         1.79         1.32         0.35         5.33         4.38         52         44         A	M 123
SrCaYbMgZn <sub>0.5</sub> Cu <sub>0.5</sub> 1.75 0.16 1041 163 -10.60 5.40 1.75 1.23 0.31 4.10 3.73 42 37	M 123
SrCaYbLi <sub>0.55</sub> Mg <sub>0.45</sub> Zn 1.76 0.16 923 226 -12.15 6.66 1.75 1.17 0.26 4.09 3.99 31 22	M 123
Septenary Alloys	
Cu <sub>0.5</sub> NiAlCoCrFeSi 1.26 0.06 1659 369 -22.58 11.82 1.93 1.81 0.12 7.00 2.72 144 39 A	M 124
CuAlNiCoCrFeSi         1.26         0.06         1638         364         -18.86         11.62         1.95         1.81         0.12         7.29         2.81         144         38	S 29
CuNiCoFeCrAl <sub>0.5</sub> V <sub>0.2</sub> 1.27 0.04 1710 352 -2.50 5.81 1.86 1.81 0.11 8.16 2.38 158 29	S 125
Al <sub>0.5</sub> CoCrCuFeNiV <sub>0.6</sub> 1.27 0.04 1741 360 -4.07 6.04 1.92 1.80 0.12 7.95 2.43 158 28 IN	+SS 125
	+SS 125
Al <sub>0.5</sub> CoCrCuFeNiV <sub>0.8</sub> 1.28 0.04 1755 362 -4.71 6.12 1.92 1.79 0.12 7.86 2.44 158 28 IN	

Al <sub>0.5</sub> CoCrCuFeNiTi <sub>0.2</sub>	1.28	0.05	1702	343	-4.15	6.79	1.86	1.81	0.12	8.12	2.43	156	30	SS	126
Al <sub>0.5</sub> CoCrCuFeNiTi <sub>0.4</sub>	1.28	0.05	1710	340	-6.42	7.60	1.90	1.80	0.13	7.98	2.50	155	31	SS	126
Al <sub>0.5</sub> CrFeNiCoCuTi <sub>0.6</sub>	1.29	0.06	1717	337	-8.40	8.19	1.92	1.79	0.13	7.85	2.56	153	31	SS	126
Al <sub>0.5</sub> CoCrCuFeNiTi <sub>0.8</sub>	1.29	0.06	1724	334	-10.11	8.65	1.92	1.78	0.14	7.73	2.61	152	32	IM+SS	126
Al <sub>0.5</sub> CoCrCuFeNiTi <sub>1.0</sub>	1.30	0.07	1731	331	-11.60	9.01	1.93	1.77	0.14	7.62	2.65	150	32	IM+SS	126
Al <sub>0.5</sub> CoCrCuFeNiTi <sub>1.2</sub>	1.30	0.07	1737	328	-12.89	9.28	1.92	1.77	0.14	7.51	2.68	149	32	IM+SS	126
Al <sub>0.5</sub> CoCrCuFeNiTi <sub>1.4</sub>	1.31	0.07	1743	325	-14.02	9.49	1.91	1.76	0.15	7.41	2.70	148	33	IM+SS	126
Al <sub>0.5</sub> CoCrCuFeNiTi <sub>1.6</sub>	1.31	0.07	1749	322	-15.01	9.65	1.90	1.75	0.15	7.31	2.72	147	33	IM+SS	126
Al <sub>0.5</sub> CoCrCuFeNiTi <sub>1.8</sub>	1.32	0.07	1754	319	-15.86	9.77	1.89	1.75	0.15	7.22	2.74	146	33	IM+SS	126
Al <sub>0.5</sub> CoCrCuFeNiTi <sub>2.0</sub>	1.32	0.07	1759	316	-16.60	9.84	1.88	1.74	0.15	7.13	2.75	145	33	IM+SS	126
CoCrFeNiAl <sub>0.4</sub> MnV	1.29	0.04	1807	325	-10.43	5.13	1.91	1.74	0.14	7.22	1.98	156	29	IM	24
Cu <sub>0.5</sub> Ti <sub>0.5</sub> CrFeCoNiAl <sub>0.5</sub>	1.29	0.06	1746	335	-10.84	7.98	1.89	1.78	0.13	7.64	2.46	155	32	SS	127
Fe6NiCoSiCrAlTi	1.27	0.07	1759	276	-21.22	9.68	1.59	1.79	0.11	7.00	2.12	152	34	SS	128
Co <sub>1.5</sub> Cr <sub>2</sub> Fe <sub>1.5</sub> NiAlMn <sub>2</sub> V	1.29	0.05	1761	366	-10.15	5.16	1.90	1.71	0.13	6.95	1.96	150	32	IM	24
Cu <sub>0.5</sub> NiAlCoCrFeTi	1.31	0.07	1699	383	-17.18	9.34	1.93	1.75	0.14	7.00	2.72	146	38	AM	129
Co <sub>0.5</sub> Cr <sub>0.5</sub> Fe <sub>0.5</sub> NiAlMnV <sub>0.5</sub>	1.31	0.06	1630	409	-15.96	6.60	1.89	1.71	0.14	6.80	2.44	142	39	SS	24
Co <sub>0.5</sub> Cr <sub>0.5</sub> Fe <sub>0.5</sub> NiAlMnV	1.31	0.05	1681	421	-16.26	6.61	1.89	1.71	0.14	6.64	2.38	144	38	SS	24
Ti <sub>53</sub> Cu <sub>27</sub> Ni <sub>12</sub> Zr <sub>3</sub> Al <sub>7</sub> Si <sub>3</sub> B	1.38	0.09	1704	327	-24.85	10.91	1.37	1.69	0.19	6.39	3.31	124	34	AM	130
						Octonary Al	loys								
TiVCrCuFeMnCoNi	1.30	0.06	1811	272	-8.13	7.26	2.08	1.74	0.15	7.50	2.29	153	25	IM+SS	131
AlCoCrCuFeNiTiV	1.31	0.06	1738	393	-13.94	8.76	2.08	1.75	0.14	7.00	2.74	147	34	SS	132
AlMoNbSiTaTiVZr	1.40	0.09	2226	699	-32.19	18.28	2.08	1.66	0.24	4.50	0.87	140	55	AM	133
						Nonary Alle	oys								
AlTiVCrCuFeMnCoNi	1.31	0.06	1713	376	-12.74	8.24	2.20	1.72	0.15	7.00	2.58	144	34	SS	131
AlCoCrCuFeMoNiTiV	1.32	0.06	1866	519	-11.21	8.32	2.20	1.79	0.19	6.89	2.60	156	42	SS	134
Al₂TiVCrCuFeMnCoNi	1.33	0.06	1635	427	-15.44	8.59	2.16	1.71	0.14	6.60	2.73	137	38	SS	131
Al <sub>4</sub> (TiVCrCuFeMnCoNi) <sub>6</sub>	1.36	0.06	1435	480	-18.33	7.74	1.87	1.68	0.13	5.57	2.82	120	42	IM+SS	131
•															

#### **Supplementary References**

- Villars, P. Handbook of ternary alloy phase diagrams. ASM International, The Material Information Society 4 (1995).
- 2. Villars, P. *Pearson's Handbook Desk Edition*. ASM International, Materials Park, OH (1997).
- 3. Lu, Z. P. & Liu, C. T. A new glass-forming ability criterion for bulk metallic glasses. *Acta Mater.* **50**, 3501–3512 (2002).

- 4. Reineke, E. G. & Inal, O. T. Crystallization behavior of amorphous Ni50Nb50 on continuous heating. *Mater. Sci. Eng.* **57**, 223–231 (1983).
- 5. Aydinbeyli, N., Nuri Celik, O., Gasan, H. & Aybar, K. Effect of the heating rate on crystallization behavior of mechanically alloyed Mg50Ni50 amorphous alloy. *Int. J. Hydrogen Energy* **31**, 2266–2273 (2006).
- 6. Hsieh, P. J., Lo, Y. C., Wang, C. T., Huang, J. C. & Ju, S. P. Cyclic transformation between nanocrystalline and amorphous phases in Zr based intermetallic alloys during ARB. *Intermetallics* **15**, 644–651 (2007).
- 7. Hu, C. J., Wu, H. M. & Chen, T. Y. Synthesis of Mg-Cu-Ti based amorphous alloys by mechanical alloying technique. *J. Phys. Conf. Ser.* **144**, 8–12 (2009).
- 8. Liu, W. Y., Zhang, H. F., Wang, A. M., Li, H. & Hu, Z. Q. New criteria of glass forming ability, thermal stability and characteristic temperatures for various bulk metallic glass systems. *Mater. Sci. Eng. A* **459**, 196–203 (2007).
- 9. Murty, B. S., Ping, D. H. & Hono, K. Nanoquasicrystallization of binary Zr-Pd metallic glasses. *Appl. Phys. Lett.* **77**, 1102–1104 (2000).
- Suzuki, K., Kataoka, N., Inoue, A., Makino, A. & Masumoto, T. High Saturation
   Magnetization and Soft Magnetic Properties of bcc Fe–Zr–B Alloys with Ultrafine Grain
   Structure. *Materials Transactions, JIM* 31, 743–746 (1990).
- 11. Zhang, Y., Zuo, T., Cheng, Y. & Liaw, P. K. High-entropy alloys with high saturation magnetization, electrical resistivity, and malleability. *Sci. Rep.* **3**, 1–7 (2013).
- 12. Na, J. H., Kim, W. T., Kim, D. H. & Yi, S. Bulk metallic glass formation in Ni-Zr-Nb-Al

- alloy systems. *Mater. Lett.* **58**, 778–782 (2004).
- 13. Wang, Q. *et al.* Composition optimization of the Cu-based Cu-Zr-Al bulk metallic glasses. *Acta Metall. Sin.* **40**, 1183–1188 (2004).
- 14. Xu, D., Duan, G., Johnson, W. L. & Garland, C. Formation and properties of new Ni-based amorphous alloys with critical casting thickness up to 5 mm. *Acta Mater.* **52**, 3493–3497 (2004).
- 15. Inoue, A. & Zhang, W. Formation, Thermal Stability and Mechanical Properties of Cu-Zr-Al Bulk Glassy Alloys. *Mater. Trans.* **43**, 2921–2925 (2002).
- 16. Chang, L. J., Yang, B. C., Chiang, P. T., Jang, J. S. C. & Huang, J. C. Glass Forming and Thermal Properties of the Mg65Cu25GD10-xNdx (x=0~10) Amorphous Alloys. *Mater. Sci. Forum* **539–543**, 2106–2110 (2007).
- 17. Li, S., Wang, R. J., Pan, M. X., Zhao, D. Q. & Wang, W. H. Heavy rare earth based bulk metallic glasses with high thermal stability. *Intermetallics* **14**, 592–595 (2006).
- 18. Li, Y. *et al.* Formation of Bulk Metallic Glasses and Their Composites. *MRS Bull.* **32**, 624–628 (2007).
- 19. Yoshizawa, Y. & Yamauchi, K. Magnetic properties of ultrafine crystalline (Fe-Cu1-Nb3)-Si-B quasi-ternary alloys and improvement of their magnetic properties by magnetic field annealing. *J. Magn. Soc. Japan* **13**, 231–236 (1989).
- 20. Inoue, A., Shen, B., Koshiba, H., Kato, H. & Yavari, A. R. Cobalt-based bulk glassy alloy with ultrahigh strength and soft magnetic properties. *Nat. Mater.* **2**, 661–3 (2003).
- 21. Inoue, A. Stabilization of metallic supercooled liquid and bulk amorphous alloys. *Acta*

- Mater. 48, 279–306 (2000).
- 22. Si, J. J. et al. Cr-based bulk metallic glasses with ultrahigh hardness. Appl. Phys. Lett. 106, (2015).
- 23. Senkov, O. N., Miller, J. D., Miracle, D. B. & Woodward, C. Accelerated exploration of multi-principal element alloys with solid solution phases. *Nat. Commun.* **6**, 1–10 (2015).
- 24. Tsai, M. H. *et al.* Criterion for sigma phase formation in Cr- and V-Containing highentropy alloys. *Mater. Res. Lett.* **1**, 207–212 (2013).
- 25. Liu, L., Zhu, J. B., Zhang, C., Li, J. C. & Jiang, Q. Microstructure and the properties of FeCoCuNiSn x high entropy alloys. *Mater. Sci. Eng. A* **548**, 64–68 (2012).
- 26. Wu, Z., Bei, H., Otto, F., Pharr, G. M. & George, E. P. Recovery, recrystallization, grain growth and phase stability of a family of FCC-structured multi-component equiatomic solid solution alloys. *Intermetallics* **46**, 131–140 (2014).
- 27. Gao, M. C., Zhang, B., Guo, S. M., Qiao, J. W. & Hawk, J. A. High-Entropy Alloys in Hexagonal Close-Packed Structure. *Metall. Mater. Trans. A Phys. Metall. Mater. Sci.* 47, 3322–3332 (2016).
- 28. Schroers, J., Lohwongwatana, B., Johnson, W. L. & Peker, A. Gold based bulk metallic glass. *Appl. Phys. Lett.* **87**, 7–10 (2005).
- 29. Yeh, J. W., Chang, S. Y., Hong, Y. Der, Chen, S. K. & Lin, S. J. Anomalous decrease in X-ray diffraction intensities of Cu-Ni-Al-Co-Cr-Fe-Si alloy systems with multi-principal elements. *Mater. Chem. Phys.* **103**, 41–46 (2007).
- 30. Zhang, W. & Inoue, A. Formation and mechanical properties of Ni-based Ni-Nb-Ti-Hf

- bulk glassy alloys. Scr. Mater. 48, 641–645 (2003).
- 31. Lee, J. K., Kim, W. T. & Kim, D. H. Effects of Pd addition on the glass forming ability and crystallization behavior in the Ni–Zr–Ti alloys. *Mater. Lett.* **57**, 1514–1519 (2003).
- 32. Zhang, T. & Inoue, A. Thermal and Mechanical Properties of Ti-Ni-Cu-Sn Amorphous Alloys with a Wide Supercooled Liquid Region before Crystallization. *Mater. Trans. JIM* **39**, 1001–1006 (1998).
- 33. Calin, M., Eckert, J. & Schultz, L. Improved mechanical behavior of Cu-Ti-based bulk metallic glass by in situ formation of nanoscale precipitates. *Scr. Mater.* **48**, 653–658 (2003).
- 34. Inoue, A., Zhang, W., Zhang, T. & Kurosaka, K. Cu-based bulk glassy alloys with high tensile strength of over 2000 MPa. in *Journal of Non-Crystalline Solids* **304**, 200–209 (2002).
- 35. Senkov, O. N., Wilks, G. B., Scott, J. M. & Miracle, D. B. Mechanical properties of Nb 25Mo25Ta25W25 and V20Nb20Mo20Ta20W20 refractory high entropy alloys.

  \*\*Intermetallics 19, 698–706 (2011).\*\*
- 36. Yang, X., Zhang, Y. & Liaw, P. K. Microstructure and compressive properties of NbTiVTaAlx high entropy alloys. in *Procedia Engineering* **36**, 292–298 (2012).
- 37. Stepanov, N. D., Shaysultanov, D. G., Salishchev, G. A. & Tikhonovsky, M. A. Structure and mechanical properties of a light-weight AlNbTiV high entropy alloy. *Mater. Lett.* **142**, 153–155 (2015).
- 38. Senkov, O. N., Senkova, S. V, Woodward, C. & Miracle, D. B. Low-density, refractory

- multi-principal element alloys of the Cr-Nb-Ti-V-Zr system: Microstructure and phase analysis. *Acta Mater.* **61**, 1545–1557 (2013).
- 39. Oh, J. C., Ohkubo, T., Kim, Y. C., Fleury, E. & Hono, K. Phase separation in Cu43Zr43Al7Ag7 bulk metallic glass. *Scr. Mater.* **53**, 165–169 (2005).
- 40. Yang, B. J., Yao, J. H., Chao, Y. S., Wang, J. Q. & Ma, E. Developing aluminum-based bulk metallic glasses. *Philos. Mag.* **90**, 3215–3231 (2010).
- 41. Xu, D., Duan, G. & Johnson, W. L. Unusual Glass-Forming Ability of Bulk Amorphous Alloys Based on Ordinary Metal Copper. *Phys. Rev. Lett.* **92**, 1–4 (2004).
- 42. Zhang, Y., Yang, X. & Liaw, P. K. Alloy design and properties optimization of highentropy alloys. *JOM* **64**, 830–838 (2012).
- 43. Inoue, A., Zhang, T., Nishiyama, N., Ohba, K. & Masumoto, T. Preparation of 16 mm

  Diameter Rod of Amorphous Zr65Al7.5Ni10Cu17.5 Alloy. *Mater. Trans. JIM* **34**, 1234–1237 (1993).
- 44. Lu, Z. P., Tan, H., Li, Y. & Ng, S. C. The correlation between reduced glass transition temperature and glass forming ability of bulk metallic glasses. *Scr. Mater.* **42**, 667–673 (2000).
- 45. Zhang, Z., Zhao, D. Q. & Wang, W. H. Microstructure- and property-controllable NdAlNiCuFe alloys by varying Fe content. *J. Mater. Res.* **20**, 314–319 (2005).
- 46. Li, S., Wang, R. J., Pan, M. X., Zhao, D. Q. & Wang, W. H. Bulk metallic glasses based on heavy rare earth dysprosium. *Scr. Mater.* **53**, 1489–1492 (2005).
- 47. Wu, Y. D. et al. A refractory Hf 25Nb25Ti25Zr25 high-entropy alloy with excellent

- structural stability and tensile properties. *Mater. Lett.* **130**, 277–280 (2014).
- 48. Babilas, R., Zajaczkowski, A., Głuchowski, W. & Nowosielski, R. Preparation and glassforming ability of Mg-based bulk amorphous alloys. *Arch. Mater. Sci. Eng.* **62**, 78–86 (2013).
- 49. Xu, Y. K. & Xu, J. Ceramics particulate reinforced Mg65Cu20Zn5Y10 bulk metallic glass composites. *Scr. Mater.* **49**, 843–848 (2003).
- 50. Kang, H. G., Park, E. S., Kim, W. T., Kim, D. H. & Cho, H. K. Fabrication of Bulk Mg–Cu–Ag–Y Glassy Alloy by Squeeze Casting. *Mater. Trans. JIM* **41**, 846–849 (2000).
- 51. Li, S., Zhao, D. Q., Pan, M. X. & Wang, W. H. A bulk metallic glass based on heavy rare earth gadolinium. *J. Non. Cryst. Solids* **351**, 2568–2571 (2005).
- 52. Zhang, B., Pan, M. X., Zhao, D. Q. & Wang, W. H. "Soft" bulk metallic glasses based on cerium. *Appl. Phys. Lett.* **85**, 61–63 (2004).
- 53. Lu, Z. P., Goh, T. T., Li, Y. & Ng, S. C. Glass formation in La-based La-Al-Ni-Cu-(Co) alloys by Bridgman solidification and their glass forming ability. *Acta Mater.* **47**, 2215–2224 (1999).
- 54. Wei, Y. X. *et al.* Erbium- and cerium-based bulk metallic glasses. *Scr. Mater.* **54**, 599–602 (2006).
- 55. Xi, X. K. et al. Bulk scandium-based metallic glasses. J. Mater. Res. 20, 2243–2247 (2005).
- 56. Tung, C. C. *et al.* On the elemental effect of AlCoCrCuFeNi high-entropy alloy system. *Mater. Lett.* **61**, 1–5 (2007).

- 57. Yeh, J. W. *et al.* Nanostructured high-entropy alloys with multiple principal elements: Novel alloy design concepts and outcomes. *Adv. Eng. Mater.* **6**, 299-303 (2004).
- 58. Shun, T. T., Hung, C. H. & Lee, C. F. Formation of ordered/disordered nanoparticles in FCC high entropy alloys. *J. Alloys Compd.* **493**, 105–109 (2010).
- 59. Kao, Y. F., Chen, T. J., Chen, S. K. & Yeh, J. W. Microstructure and mechanical property of as-cast, -homogenized, and -deformed AlxCoCrFeNi  $(0 \le x \le 2)$  high-entropy alloys. *J. Alloys Compd.* **488**, 57–64 (2009).
- 60. Guo, S., Ng, C., Lu, J. & Liu, C. T. Effect of valence electron concentration on stability of fcc or bcc phase in high entropy alloys. *J. Appl. Phys.* **109**, (2011).
- 61. Ma, S. G. *et al.* Superior high tensile elongation of a single-crystal CoCrFeNiAl0.3 high-entropy alloy by Bridgman solidification. *Intermetallics* **54**, 104–109 (2014).
- 62. Guo, S., Ng, C. & Liu, C. T. Anomalous solidification microstructures in Co-free Al xCrCuFeNi2 high-entropy alloys. *J. Alloys Compd.* **557**, 77–81 (2013).
- 63. Zhang, Y., Zhou, Y. J., Lin, J. P., Chen, G. L. & Liaw, P. K. Solid-solution phase formation rules for multi-component alloys. *Adv. Eng. Mater.* **10**, 534–538 (2008).
- 64. Cantor, B., Chang, I. T. H., Knight, P. & Vincent, A. J. B. Microstructural development in equiatomic multicomponent alloys. *Mater. Sci. Eng. A* **375–377**, 213–218 (2004).
- 65. Ng, C. *et al.* Phase stability and tensile properties of Co-free Al0.5CrCuFeNi2 highentropy alloys. *J. Alloys Compd.* **584**, 530–537 (2014).
- 66. He, F. *et al.* Designing eutectic high entropy alloys of CoCrFeNiNbx. *J. Alloys Compd.*656, 284–289 (2016).

- 67. Troparevsky, M. C., Morris, J. R., Kent, P. R. C., Lupini, A. R. & Stocks, G. M. Criteria for predicting the formation of single-phase high-entropy alloys. *Phys. Rev. X* **5**, 1–6 (2015).
- 68. Chen, H. Y. *et al.* Effect of the substitution of Co by Mn in Al-Cr-Cu-Fe-Co-Ni highentropy alloys. *Ann. Chim. Sci. des Mater.* **31**, 685–698 (2006).
- 69. Liu, L., Zhu, J. B., Li, L., Li, J. C. & Jiang, Q. Microstructure and tensile properties of FeMnNiCuCoSnx high entropy alloys. *Mater. Des.* **44**, 223–227 (2013).
- 70. Li, C., Li, J. C., Zhao, M. & Jiang, Q. Effect of alloying elements on microstructure and properties of multiprincipal elements high-entropy alloys. *J. Alloys Compd.* **475**, 752–757 (2009).
- 71. Jiang, L. *et al.* Effect of Mo and Ni elements on microstructure evolution and mechanical properties of the CoFeNixVMoyhigh entropy alloys. *J. Alloys Compd.* **649**, 585–590 (2015).
- 72. Lu, Y. *et al.* A promising new class of high-temperature alloys: Eutectic high-entropy alloys. *Sci. Rep.* **4**, 1–5 (2014).
- 73. Jiang, L. *et al.* Effects of Nb addition on structural evolution and properties of the CoFeNi2V0.5 high-entropy alloy. *Appl. Phys. A Mater. Sci. Process.* **119**, 291–297 (2015).
- 74. Jiang, H. *et al.* Microstructures and mechanical properties of Co2MoxNi2VWx eutectic high entropy alloys. *Mater. Des.* **109**, 539–546 (2016).
- 75. Ren, B. et al. Effect of elemental interaction on microstructure of CuCrFeNiMn high

- entropy alloy system. J. Alloys Compd. **493**, 148–153 (2010).
- 76. Otto, F., Yang, Y., Bei, H. & George, E. P. Relative effects of enthalpy and entropy on the phase stability of equiatomic high-entropy alloys. *Acta Mater.* **61**, 2628–2638 (2013).
- 77. Hsieh, K. C. *et al.* The microstructure and phase equilibrium of new high performance high-entropy alloys. *J. Alloys Compd.* **483**, 209–212 (2009).
- 78. Zhang, Y., Ma, S. G. & Qiao, J. W. Morphology transition from dendrites to equiaxed grains for AlCoCrFeNi high-entropy alloys by copper mold casting and bridgman solidification. *Metall. Mater. Trans. A Phys. Metall. Mater. Sci.* **43**, 2625–2630 (2012).
- 79. Zhuang, Y. X., Xue, H. D., Chen, Z. Y., Hu, Z. Y. & He, J. C. Effect of annealing treatment on microstructures and mechanical properties of FeCoNiCuAl high entropy alloys. *Mater. Sci. Eng. A* **572**, 30–35 (2013).
- 80. Zhang, K. & Fu, Z. Intermetallics Effects of annealing treatment on properties of CoCrFeNiTiAlx multi-component alloys. *Intermetallics* **28**, 34–39 (2012).
- 81. Ke, G.-Y., Chen, G.-Y., Hsu, T. & Yeh, J.-W. FCC and BCC equivalents in as-cast solid solutions of AlxCoyCrzCu0.5FevNiw high-entropy alloys. *Ann. Chim.* **31**, 669–683 (2006).
- 82. Guo, S., Hu, Q., Ng, C. & Liu, C. T. More than entropy in high-entropy alloys: Forming solid solutions or amorphous phase. *Intermetallics* **41**, 96–103 (2013).
- 83. Yang, X. & Zhang, Y. Prediction of high-entropy stabilized solid-solution in multi-component alloys. *Mater. Chem. Phys.* **132**, 233–238 (2012).
- 84. Ding, H. Y. & Yao, K. F. High entropy Ti20Zr20Cu20Ni20Be20 bulk metallic glass. *J*.

- Non. Cryst. Solids 364, 9–12 (2013).
- 85. Amiya, K., Nishiyama, N., Inoue, A. & Masumoto, T. Mechanical strength and thermal stability of Ti-based amorphous alloys with large glass-forming ability. *Mater. Sci. Eng. A* **179–180**, 692–696 (1994).
- 86. Knipling, K. E., Narayana, P. U. & Nguyen, L. T. Microstructures and Properties of As-Cast AlCrFeMnV, AlCrFeTiV, and AlCrMnTiV High Entropy Alloys. *Microsc. Microanal.* 23, 702–703 (2017).
- 87. Venkataraman, S. *et al.* Metallic glass formation in the Cu47Ti33Zr11Ni8Si1 alloy. *Mater. Sci. Eng. A* **444**, 257–264 (2007).
- 88. Stepanov, N. D., Yurchenko, N. Y., Skibin, D. V., Tikhonovsky, M. A. & Salishchev, G. A. Structure and mechanical properties of the AlCrxNbTiV (x = 0, 0.5, 1, 1.5) high entropy alloys. *J. Alloys Compd.* **652**, 266–280 (2015).
- 89. Senkov, O. N., Wilks, G. B., Miracle, D. B., Chuang, C. P. & Liaw, P. K. Refractory highentropy alloys. *Intermetallics* **18**, 1758–1765 (2010).
- 90. Yang, T. H. *et al.* Effect of annealing on atomic ordering of amorphous ZrTaTiNbSi alloy. *Appl. Phys. Lett.* **95**, 2007–2010 (2009).
- 91. Li, Y. & Bai, H. Y. Superconductivity in a representative Zr-based bulk metallic glass. *J. Non. Cryst. Solids* **351**, 2378–2382 (2005).
- 92. Huang, Y., Shen, J., Chen, J. J. & Sun, J. Critical cooling rate and thermal stability for a Ti-Zr-Ni-Cu-Be metallic glass. *J. Alloys Compd.* **477**, 920–924 (2009).
- 93. Cunliffe, A., Plummer, J., Figueroa, I. & Todd, I. Glass formation in a high entropy alloy

- system by design. *Intermetallics* **23**, 204–207 (2012).
- 94. Ma, L., Wang, L., Zhang, T. & Inoue, A. Bulk Glass Formation of Ti-Zr-Hf-Cu-M (M=Fe, Co, Ni) Alloys. *Mater. Trans.* **43**, 277–280 (2005).
- 95. Lai, C. H., Lin, S. J., Yeh, J. W. & Davison, A. Effect of substrate bias on the structure and properties of multi-element (AlCrTaTiZr)N coatings. *J. Phys. D. Appl. Phys.* **39**, 4628–4633 (2006).
- 96. Senkov, O. N., Woodward, C. & Miracle, D. B. Microstructure and Properties of Aluminum-Containing Refractory High-Entropy Alloys. *JOM* **66**, 2030–2042 (2014).
- 97. Fazakas, E. *et al.* Experimental and theoretical study of Ti20Zr20Hf20Nb20X20 (X = V or Cr) refractory high-entropy alloys. *Int. J. Refract. Met. Hard Mater.* **47**, 131–138 (2014).
- 98. Glade, S. C. *et al.* Thermodynamics of Cu47Ti34Zr11Ni8, Zr52.5Cu17.9Ni14.6Al10Ti5 and Zr57Cu15.4Ni12.6Al10Nb5 bulk metallic glass forming alloys. *J. Appl. Phys.* **87**, 7242–7248 (2000).
- 99. Hays, C. C. *et al.* Vitrification and determination of the crystallization time scales of the bulk-metallic-glass-forming liquid Zr58.5Nb2.8Cu15.6Ni12.8Al10.3. *Appl. Phys. Lett.* **79**, 1605–1607 (2001).
- 100. Guo, N. N. *et al.* Microstructure and mechanical properties of refractory MoNbHfZrTi high-entropy alloy. *Mater. Des.* **81**, 87–94 (2015).
- 101. Senkov, O. N., Scott, J. M., Senkova, S. V., Miracle, D. B. & Woodward, C. F.
  Microstructure and room temperature properties of a high-entropy TaNbHfZrTi alloy. J.

- Alloys Compd. 509, 6043–6048 (2011).
- 102. Youssef, K. M., Zaddach, A. J., Niu, C., Irving, D. L. & Koch, C. C. A novel low-density, high-hardness, high-entropy alloy with close-packed single-phase nanocrystalline structures. *Mater. Res. Lett.* **3**, 95–99 (2015).
- 103. Ma, H., Ma, E. & Xu, J. A new Mg65Cu7.5Ni7.5Zn5Ag5Y10 bulk metallic glass with strong glass-forming ability . *J. Mater. Res.* **18**, 2288–2291 (2003).
- 104. Takeuchi, A., Amiya, K., Wada, T., Yubuta, K. & Zhang, W. High-Entropy Alloys with a Hexagonal Close-Packed Structure Designed by Equi-Atomic Alloy Strategy and Binary Phase Diagrams. *JOM* **66**, 1984–1992 (2014).
- 105. Li, H. F. *et al.* In vitro and in vivo studies on biodegradable CaMgZnSrYb high-entropy bulk metallic glass. *Acta Biomater.* **9**, 8561–8573 (2013).
- 106. Feuerbacher, M., Heidelmann, M. & Thomas, C. Hexagonal High-entropy Alloys. *Mater.*Res. Lett. 3, 1–6 (2015).
- 107. Zhao, Y. J. *et al.* A hexagonal close-packed high-entropy alloy: The effect of entropy. *Mater. Des.* **96**, 10–15 (2016).
- 108. Wang, X., Yoshii, I., Inoue, A., Kim, Y.-H. & Kim, I.-B. Bulk amorphous Ni75– xNb5 MxP20– yBy (M= Cr, Mo) alloys with large supercooling and high strength. *Mater*. *Trans. JIM* **40**, 1130–1136 (1999).
- 109. Zhou, Y. J., Zhang, Y., Wang, F. J. & Chen, G. L. Phase transformation induced by lattice distortion in multiprincipal component CoCrFeNiCuxAl1-x solid-solution alloys. *Appl. Phys. Lett.* 92, 1–4 (2008).

- 110. Tong, C. J. *et al.* Microstructure characterization of AlxCoCrCuFeNi high-entropy alloy system with multiprincipal elements. *Metall. Mater. Trans. A Phys. Metall. Mater. Sci.* **36**, 881–893 (2005).
- 111. Daoud, H. M., Manzoni, A., Völkl, R., Wanderka, N. & Glatzel, U. Microstructure and tensile behavior of Al8Co17Cr 17Cu8Fe17Ni33 (at.%) high-entropy alloy. *JOM* **65**, 1805–1814 (2013).
- 112. Ng, C., Guo, S., Luan, J., Shi, S. & Liu, C. T. Entropy-driven phase stability and slow diffusion kinetics in an Al0.5CoCrCuFeNi high entropy alloy. *Intermetallics* **31**, 165–172 (2012).
- 113. Wang, X. F., Zhang, Y., Qiao, Y. & Chen, G. L. Novel microstructure and properties of multicomponent CoCrCuFeNiTix alloys. *Intermetallics* **15**, 357–362 (2007).
- 114. Zhang, K. B. *et al.* Annealing on the structure and properties evolution of the CoCrFeNiCuAl high-entropy alloy. *J. Alloys Compd.* **502**, 295–299 (2010).
- 115. MacDonald, B. E. et al. Recent Progress in High Entropy Alloy Research. JOM 69, 2024–2031 (2017).
- 116. Zhou, Y. J., Zhang, Y., Wang, Y. L. & Chen, G. L. Solid solution alloys of AlCoCrFeNi Tix with excellent room-temperature mechanical properties. *Appl. Phys. Lett.* **90**, (2007).
- 117. Chen, M., Liu, Y., Li, Y. & Chen, X. Mricostructure and mechanical properties of AlTiFeNiCuCrx high-entropy alloy with multi-principal elements. *Acta Metallurgica Sinica* **43**, 1020–1024 (2007).
- 118. Cheng, K.-H., Lai, C.-H., Lin, S.-J. & Yeh, J.-W. Structural and mechanical properties of

- multi-element (AlCrMoTaTiZr)Nx coatings by reactive magnetron sputtering. *Thin Solid Films* **519**, 3185–3190 (2010).
- 119. Senkov, O. N. & Woodward, C. F. Microstructure and properties of a refractory NbCrMo0.5Ta0.5TiZr alloy. *Mater. Sci. Eng. A* **529**, 311–320 (2011).
- 120. Yang, J. Y., Zhou, Y. J., Zhang, Y. & Chen, G. L. Solid solution formation criteria in the multi-component alloys with high entropy of mixing. *Chinese Mater. Sci. Technol. Equip.* 5, 61–63 (2007).
- 121. Senkov, O. N., Senkova, S. V. & Woodward, C. Effect of aluminum on the microstructure and properties of two refractory high-entropy alloys. *Acta Mater.* **68**, 214–228 (2014).
- 122. Ma, H., Ma, E. & Xu, J. A new Mg-Cu-Ni-Zn-Ag-Y bulk metallic glass with strong glass-forming ability. *J. Mater. Res.* **18**, 2288–2291 (2003).
- 123. Gao, X. Q. *et al.* High mixing entropy bulk metallic glasses. *J. Non. Cryst. Solids* **357**, 3557–3560 (2011).
- 124. Chen, Y. Y. *et al.* Corrosion properties of a novel bulk Cu0.5NiAlCoCrFeSi glassy alloy in 288 °C high-purity water. *Mater. Lett.* **61**, 2692–2696 (2007).
- 125. Chen, M. R. *et al.* Effect of vanadium addition on the microstructure, hardness, and wear resistance of Al0.5CoCrCuFeNi high-entropy alloy. *Metall. Mater. Trans. A Phys. Metall. Mater. Sci.* **37**, 1363–1369 (2006).
- 126. Chen, M.-R. *et al.* Microstructure and Properties of Al0.5CoCrCuFeNiTix (x = 0-2.0) High-Entropy Alloys. *Mater. Trans.* **47**, 1395–1401 (2006).
- 127. Wang, F. J., Zhang, Y. & Chen, G. L. Atomic packing efficiency and phase transition in a

- high entropy alloy. J. Alloys Compd. 478, 321–324 (2009).
- 128. Zhang, H., Pan, Y., He, Y. & Jiao, H. Microstructure and properties of 6FeNiCoSiCrAlTi high-entropy alloy coating prepared by laser cladding. *Appl. Surf. Sci.* **257**, 2259–2263 (2011).
- 129. Yeh, J. Recent Progress in High Entropy Alloy Research. *Ann. Chim. Sci. des Mater.* **31**, 633–648 (2006).
- 130. Xia, M. X., Ma, C. L., Zheng, H. X. & Li, J. G. Preparation and crystallization of Ti53Cu27 Ni12Zr3Al7Si3B1 bulk metallic glass with wide supercooled liquid region. *Mater. Sci. Eng. A* 390, 372–375 (2005).
- 131. Zhou, Y. J., Zhang, Y., Wang, Y. L. & Chen, G. L. Microstructure and compressive properties of multicomponent Alx(TiVCrMnFeCoNiCu) 100-x high-entropy alloys. *Mater. Sci. Eng. A* **454–455**, 260–265 (2007).
- 132. Yeh, J.-W. *et al.* Formation of simple crystal structures in Cu-Co-Ni-Cr-Al-Fe-Ti-V alloys with multiprincipal metallic elements. *Metall. Mater. Trans. A* **35**, 2533–2536 (2007).
- 133. Tsai, M. H., Yeh, J. W. & Gan, J. Y. Diffusion barrier properties of AlMoNbSiTaTiVZr high-entropy alloy layer between copper and silicon. *Thin Solid Films* **516**, 5527–5530 (2008).
- 134. Chang, C. W. Microstructure and Properties of As-Cast 10-Component Nanostructured AlCoCrCuFeMoNiTiVZr High-Entropy Alloy. *Natl. Tsing Hua Univ.* (2004).