Aluminim deformation Analysis using Lammps

Strain	Stress_x	Stress_y	Stress_z
6.9916E-16	0.011763413	0.026127131	-0.011552159
0.00248	0.192635362	0.019016066	-0.008108238
0.00498	0.339250939	0.007459304	-0.002251608
0.00748	0.501188725	-0.020989821	0.009224583
0.00998	0.646949383	-0.007918856	0.039103565
0.01248	0.822890389	0.028274073	0.001145977
0.01498	0.96740162	0.012669298	0.025245205
0.01748	1.115267718	0.01751127	0.005031525
0.01998	1.291052484	0.005325323	0.005778539
0.02248	1.422583669	-0.024063294	0.010677531
0.02498	1.573118702	-0.025105263	-0.022373537
0.02748	1.749047508	-0.016091307	0.001265459
0.02998	1.882869094	-0.060040595	-0.017520734
0.03248	2.047850194	0.009665871	-0.00888242
0.03498	2.180181894	-0.02733356	-0.015973986
0.03748	2.361735557	-0.032289067	-0.010476601
0.03998	2.518539498	-0.014762476	0.010439671
0.04248	2.660807541	0.030650875	0.004305243
0.04498	2.806261846	0.011647517	-0.001734401
0.04748	2.960973988	-0.020528567	-0.010741152
0.04998	3.096769268	-0.008423637	-0.029505462
0.05248	3.255780643	-0.032378687	0.01906099
0.05498	3.408252112	0.023025333	-0.00661851
0.05748	3.570561184	-0.007867251	0.044713611
0.05998	3.665895841	-0.002956668	-0.044261932
0.06248	3.851489936	-0.008990426	-0.014078712
0.06498	3.961415486	-0.016385377	-0.019335968
0.06748	4.130683262	0.001486425	5.32102E-05
0.06998	4.279490491	0.039814357	0.007771389
0.07248	4.462952625	0.035159306	0.041126217
0.07498	4.561596032	0.014391122	0.008766367
0.07748	4.692850555	-0.010424116	-0.02075865
0.07998	4.847306443	-3.55595E-06	-0.023479476
0.08248	4.973937524	-0.01930227	0.012878015
0.08498	5.156924215	0.050688217	-0.019938192
0.08748	5.293834992	-0.01925932	0.058880997
0.08998	5.429327015	0.0236952	0.048659373
0.09248	5.551677321	0.013071869	0.029387837
0.09498	5.659488897	0.006958604	0.018739221
0.09748	5.780381142	0.035448426	-0.014621678
0.09998	5.922675265	-0.024475332	-0.011551303
0.10248	6.046724896	-0.019020396	-0.011314828
0.10498	6.177443299	-0.05248983	-0.037595315
0.10748	6.30465108	-0.040780698	0.003448554
0.10998	6.457864563	-0.010342988	0.013840819

0.11248	6.631357092	0.015571745	0.076641576
0.11498	6.708073918	0.046789788	0.014352065
0.11748	6.85421871	0.056564434	0.020308563
0.11998	6.962078591	0.031687303	0.02844877
0.12248	7.080016065	0.037767547	0.001835283
0.12498	7.180103046	0.039181706	0.036282826
0.12748	7.34551658	0.025214475	0.051916674
0.12998	7.360057306	-0.001215799	-0.029268929
0.13248	7.501002633	-0.025627603	-0.052596432
0.13498	7.558540006	-0.106091173	-0.061858152
0.13748	7.739776563	-0.003409998	-0.036500376
0.13998	7.817142395	0.011834147	-0.026514456
0.14248	7.916454356	0.032373458	-0.019588867
0.14498	7.952998516	0.035680751	0.09421817
0.14748	7.9251199	0.06180389	0.048989757
0.14998	7.754431532	0.082469602	0.088886794
0.15248	6.849012247	0.060146816	0.116020746
0.15498	4.972673409	0.166833777	-0.001653329
0.15748	2.622387314	0.0192745	-0.088922531
0.15998	1.887344228	-0.016692662	0.026437979
0.16248	1.739065805	-0.043437465	-0.061833691
0.16498	1.552944733	-0.141019661	-0.020120888
0.16748	1.512331733	0.011149015	-0.007791749
0.16998	1.510665026	-0.089554219	0.03624476
0.17248	1.682441191	-0.024769073	-0.070323962
0.17498	1.828022082	-0.011950178	-0.065585575
0.17748	1.905223477	-0.074888624	-0.00897933
0.17998	1.834320929	-0.043002676	-0.110174324
0.18248	1.83687287	-0.072765655	-0.09230581
0.18498	1.921350613	-0.072449403	0.018698762
0.18748	1.901630111	-0.02793849	-0.101622571
0.18998	1.944276201	-0.153824153	-0.146264169
0.19248	2.031365538	-0.084923042	-0.157346207
0.19498	1.996248041	-0.018399982	-0.069605868
0.19748	1.89988817	-0.030198588	0.057621602
0.19998	1.820041631	-0.013969414	-0.030691888

Young's Modulys   61.581 Gpa

Young's Modulus

$$y = 61.581x + 0.0394$$
$$R^2 = 0.9998$$

Stress-Strain Curve Al @ 300K

Stress (GPa)

Strain

Stress_x ———   Stress_y ———   Stress_z