

**TABLE 13** Neurons, Weights and Biases for the First Hidden Layer for the ANN Model in this Study

Neuron	Temperature	Molecular Weight	Number of C	Number of H	Number of N	Number of O	Refractive Index	Sound Velocity	Density	Viscosity	Bias
1	-0.1606	0.0418	-0.2179	0.1791	-0.5387	0.5581	-0.0116	0.5601	0.3960	0.5408	0.1280
2	-0.0019	0.2824	-0.4485	0.6275	-0.4088	-0.0983	0.2342	0.2044	-0.2735	-0.9534	0.4230
3	0.3512	0.5736	-0.4307	-0.0813	-0.7615	-0.0966	0.6547	0.1445	-0.7132	-0.5333	0.3857
4	-0.7657	0.4059	0.2351	-0.1342	0.4731	0.5649	-0.5287	0.4273	-0.5889	0.4599	0.0970
5	-0.5625	0.6416	-0.0182	-0.5174	0.3660	0.6449	-0.1326	-0.6361	-0.2539	0.2892	-0.1645
6	0.0953	0.3919	-0.3118	0.3992	0.7698	-0.6674	-0.5810	-0.1775	-0.4318	-0.7450	0.1681
7	0.2029	0.7125	-0.5716	0.0432	-0.3829	0.6687	-0.4168	0.2658	0.2181	0.0705	-0.1781
8	-0.3264	-0.7266	0.3055	0.0234	-0.7161	0.0598	-0.5198	0.0999	0.6816	-0.4716	0.1862
9	-0.6917	0.3358	-0.2423	-0.3921	0.5583	0.2305	0.3588	-0.6494	0.4169	-0.7451	0.1513
10	-0.5985	-0.8256	-0.0713	0.6598	-0.2951	-0.1735	-0.0084	0.6206	0.4261	0.3258	-0.2165
11	0.7704	0.3803	0.4634	0.6663	-0.4879	0.6356	0.4890	0.1110	0.2620	-0.2092	0.0304
12	-0.3404	-0.5674	-0.7932	-0.5772	-0.4899	-0.2049	-0.5343	0.2947	-0.1619	-0.1266	0.0807
13	-0.0338	-0.6166	-0.3253	-0.7251	0.0677	0.6614	0.4311	-0.7018	-0.6937	-0.4153	0.1659
14	-0.2682	-0.5091	0.0480	0.3170	-0.7225	0.8834	-0.3158	0.0101	-0.4100	-0.1235	0.2524
15	0.2565	-0.1078	0.3414	-0.4316	-0.2166	0.0072	-0.7935	0.5236	-0.0566	-0.4636	-0.0757
16	0.3958	0.4307	-0.0701	0.2972	-0.6833	0.5825	0.6117	-0.5569	-0.6424	-0.5044	0.2795
17	0.0319	0.0469	-0.3511	0.0314	-0.9649	0.7494	0.4980	0.2465	-0.7343	0.5067	0.2693
18	-0.5768	-0.2701	0.6151	-0.5232	0.0859	-0.7951	-0.0321	0.0401	0.2094	-0.0761	0.3236
19	-0.1144	-0.7453	-0.0239	0.6069	0.8351	-0.2969	-0.0053	0.0238	-0.1657	0.5311	0.1203
20	-0.3066	0.4596	-0.4190	0.0733	-0.7205	-0.9337	-0.1272	-0.2780	-0.3781	0.2868	0.4707
21	-0.7033	-0.3322	-0.7593	0.0392	-0.3011	0.8993	0.5743	-0.6363	-0.5388	-0.5341	0.1583
22	-0.2757	0.5471	-0.7170	-0.3693	-0.8787	0.6861	-0.6731	-0.6895	0.0206	-0.1790	0.3536

23	0.0430	-0.5891	-0.5039	-0.0625	-0.5739	-0.1442	-0.3621	0.2378	-0.2223	-0.0527	0.3039
24	0.0180	0.8456	-0.2889	-0.6364	0.6036	-0.0969	-0.3055	0.2153	-0.3660	0.1361	0.1386
25	0.4003	0.1114	0.5461	-0.3675	0.6447	-0.0693	-0.7118	0.6243	-0.0737	0.0206	0.3567
26	0.2454	-0.4345	0.3552	0.4435	-0.8293	0.3049	-0.3266	-0.6133	-0.5094	-0.0145	-0.1643
27	-0.3604	0.1635	0.4420	0.7140	0.8929	0.0178	-0.2349	-0.6850	0.2051	0.4970	0.1628
28	0.3333	0.0583	0.3531	-0.1965	-0.3599	0.5106	-0.2346	-0.7218	0.7650	-0.3121	0.3366
29	-0.4641	-0.4724	-0.5901	0.2899	-0.0581	-0.5267	-0.3159	-0.8717	-0.0177	-0.0139	0.1253
30	0.1067	-0.4578	-0.2740	0.2515	-0.7895	-0.2120	0.1888	-0.3705	0.6872	-0.1911	0.3330
31	-0.3392	-0.1498	0.3646	0.6204	-0.1839	0.6582	-0.3199	0.1551	0.3568	0.1923	0.1583
32	0.4965	0.5742	-0.3691	0.1134	-0.0984	-0.8393	-0.8090	-0.2186	-0.6202	0.1156	0.2307
33	0.6700	0.2042	-0.0350	0.3204	0.3162	0.4469	-0.8651	0.5723	0.0352	0.3410	-0.2331
34	0.1773	-0.5900	0.4932	0.3290	-0.4802	-0.3170	0.5759	0.5560	-0.6513	-0.9507	0.3155
35	-0.2870	-0.0699	-0.0866	-0.2916	-0.1423	0.3922	0.7709	0.0266	-0.4360	0.1056	-0.1400
36	0.3352	-0.3374	-0.7176	-0.3203	0.6644	-0.0147	0.3215	0.2830	-0.7252	0.4149	0.3521
37	0.0020	-0.2064	-0.5518	-0.0655	0.2919	-0.6655	-0.6246	-0.6007	0.7581	0.5035	-0.1730
38	0.7213	-0.0464	0.2616	-0.7370	0.0446	-0.4197	-0.6358	-0.5214	-0.4455	0.3504	0.1515
39	0.0745	0.7063	0.3609	0.0959	-0.1461	-0.2016	-0.1824	0.7324	0.1838	-0.7503	0.2346
40	-0.7435	-0.4516	0.6738	-0.1484	-0.1391	0.3766	0.5637	0.3620	-0.5014	-0.2568	0.1497