P L A S U S

German high-quality plasma spectroscopy
and software solutions

September 2008

PLASUS SpecLine

Version 2.1

Content of Database for Version:

SpecLine A

SpecLine AM

SpecLine AMS

Atoms in PLASUS SpecLine A, AM and AMS:

The ionisation states are given in spectroscopic notation: 'I' denotes neutrals, 'II' single ionized elements, 'III' double ionized elements, etc..

Z	Element	Symbol	Ionisation state
1	Hydrogen	H, D, T	I
2	Helium	He	I - II
3	Lithium	Li	I - III
4	Beryllium	Be	I - IV
5	Boron	B	I - V
6	Carbon	C	I - V
7	Nitrogen	N	I - VII
8	Oxygen	O	I - VII
9	Fluorine	F	I - VIII
10	Neon	Ne	I - IX
11	Sodium	Na	I - IX
12	Magnesium	Mg	I - XII
13	Aluminum	Al	I - XIII
14	Silicon	Si	I - XII
15	Phosphorus	P	I - XIII
16	Sulfur	S	I - XVI
17	Chlorine	Cl	I - X
18	Argon	Ar	I - XIV
19	Potassium	K	I - XIV
20	Calcium	Ca	I - XV
21	Scandium	Sc	I - XXI
22	Titanium	Ti	I - XXI
23	Vanadium	V	I - XXII
24	Chromium	Cr	I - XXIII
25	Manganese	Mn	I - XXIV
26	Iron	Fe	I - XXV
27	Cobalt	Co	I - XXVI
28	Nickel	Ni	I - XXVII
29	Copper	Cu	I - V
30	Zinc	Zn	I - IV
31	Gallium	Ga	I - V
32	Germanium	Ge	I - V
33	Arsenic	As	I - V
34	Selenium	Se	I - V
35	Bromine	Br	I - V
36	Krypton	Kr	I - VIII
37	Rubidium	Rb	I - IV
38	Strontium	Sr	I - V
39	Yttrium	Y	I - V
40	Zirconium	Zr	I - V
41	Niob	Nb	I - V
42	Molybdenum	Mo	I - IV
43	Technetium	Tc	I - II
44	Ruthenium	Ru	I - III
45	Rhodium	Rh	I - III
46	Palladium	Pd	I - III
47	Silver	Ag	I - III
48	Cadmium	Cd	I - IV
49	Indium	In	I - V
50	Tin	Sn	I - V
51	Antimon	Sb	I - V

Z	Element	Symbol	Ionisation state
52	Tellurium	Te	I - II
53	Iodine	I	I - V
54	Xenon	Xe	I - VIII
55	Cesium	Cs	I - IV
56	Barium	Ba	I - V
57	Lanthanum	La	I - V
58	Cerium	Ce	I - V
59	Praseodymium	Pr	I - V
60	Neodymium	Nd	I - II
61	Promethium	Pm	I - II
62	Samarium	Sm	I - II
63	Europium	Eu	I - III
64	Gadolinium	Gd	I - IV
65	Terbium	Tb	I - IV
66	Dysprosium	Dy	I - II
67	Holmium	Ho	I - II
68	Erbium	Er	I - III
69	Thulium	Tm	I - III
70	Ytterbium	Yb	I - IV
71	Lutetium	Lu	I - V
72	Hafnium	Hf	I - V
73	Tantalum	Ta	I - V
74	Tungsten	W	I - II
75	Rhenium	Re	I - II
76	Osmium	Os	I - II
77	Iridium	Ir	I - II
78	Platinum	Pt	I - II
79	Gold	Au	I - III
80	Mercury	Hg	I - III
81	Thallium	Tl	I - IV
82	Lead	Pb	I - V
83	Bismuth	Bi	I - V
84	Polonium	Po	I
85	Astatine	At	I
86	Radon	Rn	I
87	Francium	Fr	I
88	Radium	Ra	I - II
89	Actinium	Ac	I - IV
90	Thorium	Th	I - IV
91	Protactinium	Pa	I - II
92	Uranium	U	I - II
93	Neptunium	Np	I
94	Plutonium	Pu	I - II
95	Americium	Am	I - II
96	Curium	Cm	I - II
97	Berkelium	Bk	I - II
98	Californium	Cf	I - II
99	Einsteinium	Es	I - II

Molecules in PLASUS SpecLine AM and AMS:

Element	Molecules
Silver molecules	Ag_2, AgCl, AgF, AgH, AgO
Aluminum molecules	Al_2, AlCl, AlF, AlH, AlH^+, AlN, AlO, AlS
Arsenic molecules	As_2, AsCl, AsF, AsH, AsN, AsO, AsO^+, AsP, AsS, AsS^+
Gold molecules	Au_2, AuCl, AuH
Boron molecules	B_2, BCl, BF, BH, BH^+, BN, BO, BO^+, BS
Barium molecules	BaCl, BaF, BaH, BaO, BaS
Beryllium molecules	BeCl, BeF, BeH, BeH^+, BeO, BeS
Carbon molecules	C_2, C_2^+, C_2^-, C_3, CCl, CF, CF_2, CH, CH^+, CH_2, CH_3, CN, CN^+, CN_2, C_2N, C_2N_2, CO, CO^+, CO_2, CO_2^+, CP, CS, CS_2, CS_2^+
Calcium molecules	CaCl, CaF, CaH, CaO, CaS
Cadmium molecules	CdCl, CdF, CdH, CdH^+
Chlorine molecules	Cl_2, Cl_2^+, ClF, ClO
Chromium molecules	CrCl, CrF, CrH, CrO, CrS
Copper molecules	Cu_2, CuCl, CuF, CuH, CuO, CuS
Fluorine molecules	F_2, F_2^+
Iron molecules	FeCl, FeF, FeO
Gallium molecules	Ga_2, GaCl, GaF, GaH, GaO
Germanium molecules	GeCl, GeF, GeH, GeO, GeS
Hydrogen molecules	HCN, HCl, HCl^+, HF, HF^+, H_2O, H_2O^+
Helium molecules	He_2, HeNe
Mercury molecules	Hg_2, Hg_2^+, HgCl, HgF, HgH, HgH^+
Indium molecules	In_2, InCl, InF, InH, InO, InO^+
Potassium molecules	K_2
Lithium molecules	Li_2, LiCl, LiH
Magnesium molecules	Mg_2, MgCl, MgF, MgH, MgH^+, MgO, MgS
Nitrogen molecules	N_2, N_2^+, NCl, NF, NH, NH^+, NH_2, NO, NO_2, N_2O, N_2O^+, NS, NS^+
Sodium molecules	Na_2, NaF, NaH, NaK
Neon molecules	Ne_2
Nickel molecules	NiCl, NiF, NiH, NiO
Oxygen molecules	O_2, O_2^+, O_3, OH, OH^+
Phosphorus molecules	P_2, P_2^+, PCl, PF, PF^+, PH, PH^+, PN, PO, PO^+, PS, PS^+
Platinum molecules	PtC, PtH, PtO
Sulfur molecules	S_2, SF, SH, SH^+, SO, SO_2, S_2O
Selenic molecules	Se_2, SeCl, SeH, SeO, SeS
Silicon molecules	Si_2, SiC_2, SiCl, SiF, SiH, SiH^+, SiH_2, SiN, SiO, SiO^+, SiO_2, SiS
Tin molecules	SnCl, SnF, SnH, SnO, SnS
Strontium molecules	SrCl, SrF, SrH, SrO
Tantalum molecules	TaO, TaO^+
Titanium molecules	TiCl, TiF, TiH, TiN, TiO, TiS
Vanadium molecules	VCl, VH, VO
Tungsten molecules	WO
Zinc molecules	Zn_2, ZnCl, ZnF, ZnH, ZnH^+, ZnO

Additional molecules in PLASUS SpecLine AMS:

Element	Molecules
Silver molecules	AgBr
Aluminum molecules	AlBr
Arsenic molecules	AsH_2
Boron molecules	BBr, BO_2, BOF_2
Bromine molecules ecules	Br_2, Br_2^+, BrCl, BrF, BrO
Carbon molecules	CBr, CHCl, CHF, CHNO, CHNS, CHO, CHOCHO, CHOF, CHOOH, CH_2O, CH_2CHCHO, CH_3Br, CH_3Cl, CH_3NO_2, CH_3O, C_2H_2, C_2H_4, C_2H_4O, C_2H_5, C_2H_5CHO, $C_2H_5NO_2$, C_3H_3, C_3H_5, C_3H_6O, C_4H_2, $C_4H_2^+$, C_5H_5, C_6H_5, C_6H_5Cl, C_6H_5F, C_6H_5CHO, C_6H_5OH, C_6H_6, C_7H_7, $C_{10}H_8$, CF_3NO, $C_3F_7NO_2$, C_3F_7NO, CF_3NO_2, $COCl_2$, C_2O, C_3O_2, COS, COS^+, C_3S_2
Calcium molecules	CaBr, CaOH
Cadmium molecules	CdBr
Cerium molecules	CeO
Chlorine molecules	ClF_3, ClO_2
Chromium molecules	CrBr
Copper molecules	CuBr, CuOH
Fluorine molecules	FCO, F_2CO
Iron molecules	FeBr
Gallium molecules	GaBr
Germanium molecules	GeBr
Hydrogen molecules	H_2, HBr, HBr^+, HCP, HNF, HNO, HNO_2, HS_2, H_2S, H_2S^+
Mercury molecules	HgBr, $HgBr_2$, $HgCl_2$
Indium molecules	InBr, $InBr_2$, $InCl_2$
Lithium molecules	LiBr
Magnesium molecules	MgBr, MgOH
Nitrogen molecules	N_3, NCO, NCS, NCl_2, NF_2, NH_3, N_2H_2, N_2H_4, NO_3, N_2O_3, N_2O_4, N_2O_5, NSF
Nickel molecules	NiBr
Phosphorus molecules	PH_2 PH_3, PHO, POBr, $POBr_2$, POCl, $POCl_2$
Sulfur molecules	S_3, S_4, SO_3
Selenic molecules	SeBr, $SeBr_2$, $SeCl_2$, SeO_2
Silicon molecules	SiBr, $SiBr^+$, SiHBr, $SiCl_2$, SiHCl, SiF_2, SiF_3, SiH
Tin molecules	SnBr
Strontium molecules	SrBr, SrOH
Titanium molecules	TiBr
Zinc molecules	ZnBr