

POSSIBLE PALLADIUM-RELATED NUCLEAR REACTIONS

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ABSTRACT

The recent discoveries by Bockris and Minevski [1] and by Mizuno et al. [2] of apparent numerous low-temperature nuclear reactions has challenged current atomic models. By making the assumption that standard conservation laws for nuclear reactions would be preserved, a large variety of possible nuclear reactions have been proposed and checked for obeying conservation rules. The purpose of this paper is to present a list of some possible nuclear reactions between palladium isotopes and the following single particles: deuterons, protons, neutrons, and alpha particles.

A. INTRODUCTION

The recent reports of a considerable number of anomalous nuclear reactions reported by Bockris and Minevski [1] plus similar results reported by Mizuno, et al. [2] challenge the current atomic models. In order to get a better understanding of how such nuclear reactions **might possible occur**, the authors have compiled a list of **possible** nuclear reactions. In compiling this list, the authors have used the well-accepted concepts of conservation principles to determine which nuclear reactions involving deuterium (d), protons (p), neutrons (n), and alpha particles (α) could occur. Each resulting nuclear reaction has been checked for obeying the conservation rules of **energy, baryon number, charge, spin, parity, and isospin**. No attempt has been made to explain how the various particles can overcome the Coulomb barrier to cause such nuclear reactions. No attempt has been made to rank the reactions according to probabilities. Also, no attempt has been made to consider all of the possible nuclear reactions between the particles and the secondary nuclides produced. Some of the experimental results given in references [1] and [2] suggest that whatever process is promoting nuclear reactions with the palladium could possibly cause nuclear reactions to occur with isotopes or elements produced by the initial palladium nuclear reactions.

B. LIST OF POSSIBLE NUCLEAR REACTIONS

The following five sections list many (but not all) possible nuclear reactions. Section 1 list the reactions between deuterium and various stable palladium isotopes. Section 2 lists the possible nuclear reactions between protons and various stable palladium isotopes. Section 3 lists possible neutron reactions with stable palladium isotopes. Section 4 lists the possible nuclear reactions with alpha particles and various stable palladium isotopes. In sections 1 through 4, the end products from the nuclear reactions all produce smaller mass elements. In section 5, are listed some of the many nuclear reactions with stable palladium isotopes that can produce higher-mass isotopes and elements.

In all sections, when a radioactive or metastable nuclide results (marked with an *) the natural radioactive decay for that nuclide is shown indented from the left margin. For such nuclides, the half-life is given, and followed

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by the chain of radioactive events (with the emission of alpha, beta, or gammas). The energies of the emitted particles are also shown. In all cases, the energy of radiation for alpha and beta particles are shown in Mev and the energy for gamma-ray emissions are shown in Kev.

The following are the list of symbols used:

symbols:

" alpha particle
 \$- negative electron
 \$+ positron
 (gamma ray
 p proton
 d deuteron
 n neutron
 t triton
 g electron capture
 IT isomeric transition
 e- conversion electron

time:

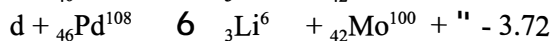
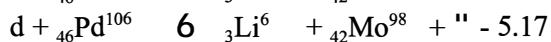
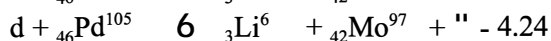
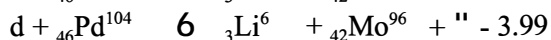
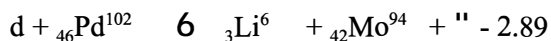
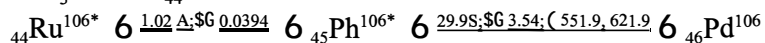
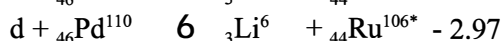
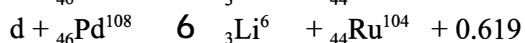
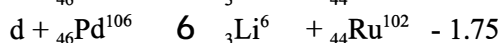
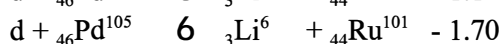
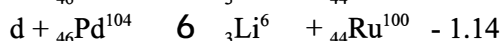
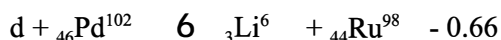
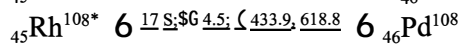
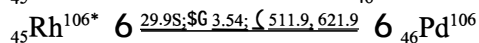
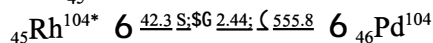
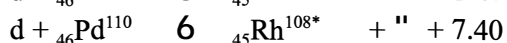
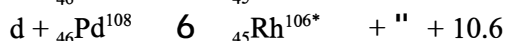
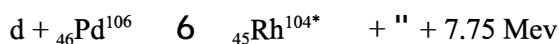
MS milliseconds
 S seconds
 M minutes
 D days
 A years

 * radioactive or metastable nuclide
 T weak
 <T very weak

(energy of radiation in Mev for Alpha and Beta, Kev for gamma)

In section 5 the dotted lines (two places) indicates that there are many other possible nuclear reactions that could occur and obey the various conservation rules. The choices of reactions made by the authors were determined by analyzing data that was provided by Bockris and Minevski [1] and by Mizuno, et al. [2].

1. d + Pd 6 C + D + ...



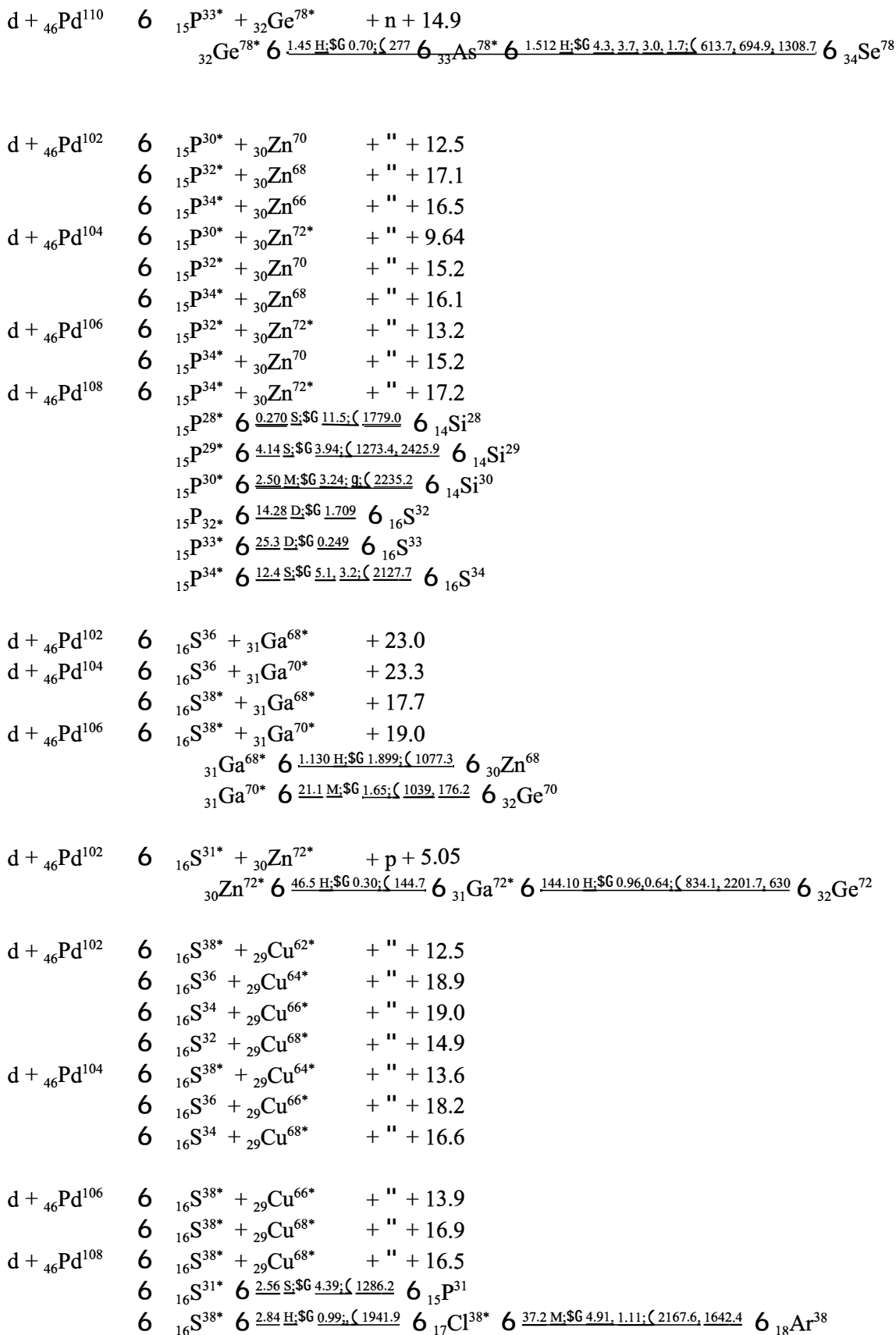
$d + {}_{46}\text{Pd}^{104}$	6	${}_4\text{Be}^{6*}$	$+ {}_{43}\text{Tc}^{100*}$	$- 8.80$
$d + {}_{46}\text{Pd}^{106}$	6	${}_4\text{Be}^{8*}$	$+ {}_{43}\text{Tc}^{100*}$	$+ 4.14$
	6	${}_4\text{Be}^{6*}$	$+ {}_{43}\text{Tc}^{102*}$	$- 10.5$
$d + {}_{46}\text{Pd}^{108}$	6	${}_4\text{Be}^{10*}$	$+ {}_{43}\text{Tc}^{100*}$	$- 0.148$
	6	${}_4\text{Be}^{8*}$	$+ {}_{43}\text{Tc}^{102*}$	$+ 6.27$
$d + {}_{46}\text{Pd}^{110}$	6	${}_4\text{Be}^{10*}$	$+ {}_{43}\text{Tc}^{102*}$	$- 3.21$
	6	${}_4\text{Be}^{12*}$	$+ {}_{43}\text{Tc}^{100*}$	$+ 4.80$
${}_{43}\text{Tc}^{100*}$	6	<u>15.8 S; \$G 3.4, 2.9; (539.5, 590.8</u>	6	${}_{44}\text{Ru}^{100}$
${}_{43}\text{Tc}^{102*}$	6	<u>4.4 M; \$G 1.8; (475.1, 628.1</u>	6	${}_{44}\text{Ru}^{102}$
	6	<u>5.3 S; \$G 4.2, 3.4, 2.2; (475.1</u>	6	${}_{44}\text{Ru}^{102}$
$d + {}_{46}\text{Pd}^{104}$	6	${}_4\text{Be}^{6*}$	$+ {}_{42}\text{Mo}^{99*}$	$+ p - 18.4$
$d + {}_{46}\text{Pd}^{105}$	6	${}_4\text{Be}^{11*}$	$+ {}_{42}\text{Mo}^{95}$	$+ p - 15.0$
$d + {}_{46}\text{Pd}^{106}$	6	${}_4\text{Be}^{6*}$	$+ {}_{42}\text{Mo}^{101*}$	$+ p - 18.9$
	6	${}_4\text{Be}^{8*}$	$+ {}_{42}\text{Mo}^{99*}$	$+ p - 3.04$
$d + {}_{46}\text{Pd}^{108}$	6	${}_4\text{Be}^{8*}$	$+ {}_{42}\text{Mo}^{101*}$	$+ p - 1.67$
	6	${}_4\text{Be}^{10*}$	$+ {}_{42}\text{Mo}^{99*}$	$+ p - 7.33$
$d + {}_{46}\text{Pd}^{110}$	6	${}_4\text{Be}^{10*}$	$+ {}_{42}\text{Mo}^{101*}$	$+ p - 11.6$
$d + {}_{46}\text{Pd}^{106}$	6	${}_4\text{Be}^{6*}$	$+ {}_{42}\text{Mo}^{99*}$	$+ t - 24.1$
$d + {}_{46}\text{Pd}^{108}$	6	${}_4\text{Be}^{6*}$	$+ {}_{42}\text{Mo}^{101*}$	$+ t - 23.2$
	6	${}_4\text{Be}^{8*}$	$+ {}_{42}\text{Mo}^{99*}$	$+ t - 7.33$
$d + {}_{46}\text{Pd}^{110}$	6	${}_4\text{Be}^{8*}$	$+ {}_{42}\text{Mo}^{101*}$	$+ t - 11.6$
	6	${}_4\text{Be}^{10*}$	$+ {}_{42}\text{Mo}^{99*}$	$+ t - 16.8$
${}_{42}\text{Mo}^{99*}$	6	<u>2.747 D; \$G 1.214; (140.5, 739.5</u>	6	${}_{43}\text{Tc}^{99*}$
			6	<u>6.01 H; IT 142.7, 2.2(eG), (140.5; \$G 0.435</u>
${}_{42}\text{Mo}^{101*}$	6	<u>14.6 M; \$G 0.7, 2.23; (191.9, 590.9, 1012.5, 506.0</u>	6	${}_{43}\text{Tc}^{101*}$
			6	<u>14.2 M; \$G 1.32; (306.8</u>
			6	${}_{44}\text{Ru}^{99}$
			6	${}_{44}\text{Ru}^{101}$
$d + {}_{46}\text{Pd}^{106}$	6	${}_4\text{Be}^{6*}$	$+ {}_{41}\text{Nb}^{98*}$	$+ " - 1.41$
$d + {}_{46}\text{Pd}^{108}$	6	${}_4\text{Be}^{8*}$	$+ {}_{41}\text{Nb}^{98*}$	$+ " + 2.75$
$d + {}_{46}\text{Pd}^{110}$	6	${}_4\text{Be}^{10*}$	$+ {}_{41}\text{Nb}^{98*}$	$+ " - 6.73$
	${}_4\text{Be}^{6*}$	6	<u>5.0E-21 S; 2p, "</u>	
	${}_4\text{Be}^{8*}$	6	<u>7E-17 S; 2" 0.0641</u>	
	${}_4\text{Be}^{10*}$	6	<u>1.6E6 A; \$G 0.556</u>	6
	${}_5\text{B}^{10}$	6	<u>13.8 S; \$G 11.5, 9.4; (2124.5</u>	6
	${}_5\text{B}^{11}$	6	<u>20.20 MS; \$G 13.37; (4439</u>	6
	${}_5\text{B}^{12}$	6	<u>12 MS; \$G</u>	6
	${}_5\text{B}^{12*}$	6	<u>20.20 MS; \$G 13.37; (4439</u>	6
	${}_6\text{C}^{12}$	6	<u>51 M; \$G 2.3, 1.9; (787.3, 722.7</u>	6
	${}_{41}\text{Nb}^{98*}$	6	<u>2.9 S; \$G 4.6; (787.3, 1024.0</u>	6
	${}_{42}\text{Mo}^{98}$	6		6
${}_{42}\text{Mo}^{98}$	6			6
$d + {}_{46}\text{Pd}^{105}$	6	${}_5\text{B}^{10}$	$+ {}_{42}\text{Mo}^{96}$	$+ n - 6.60$
$d + {}_{46}\text{Pd}^{102}$	6	${}_5\text{B}^{12*}$	$+ {}_{42}\text{Mo}^{92}$	$- 1.35$
$d + {}_{46}\text{Pd}^{104}$	6	${}_5\text{B}^{12*}$	$+ {}_{42}\text{Mo}^{94}$	$- 1.24$
$d + {}_{46}\text{Pd}^{105}$	6	${}_5\text{B}^{12*}$	$+ {}_{42}\text{Mo}^{95}$	$- 0.93$

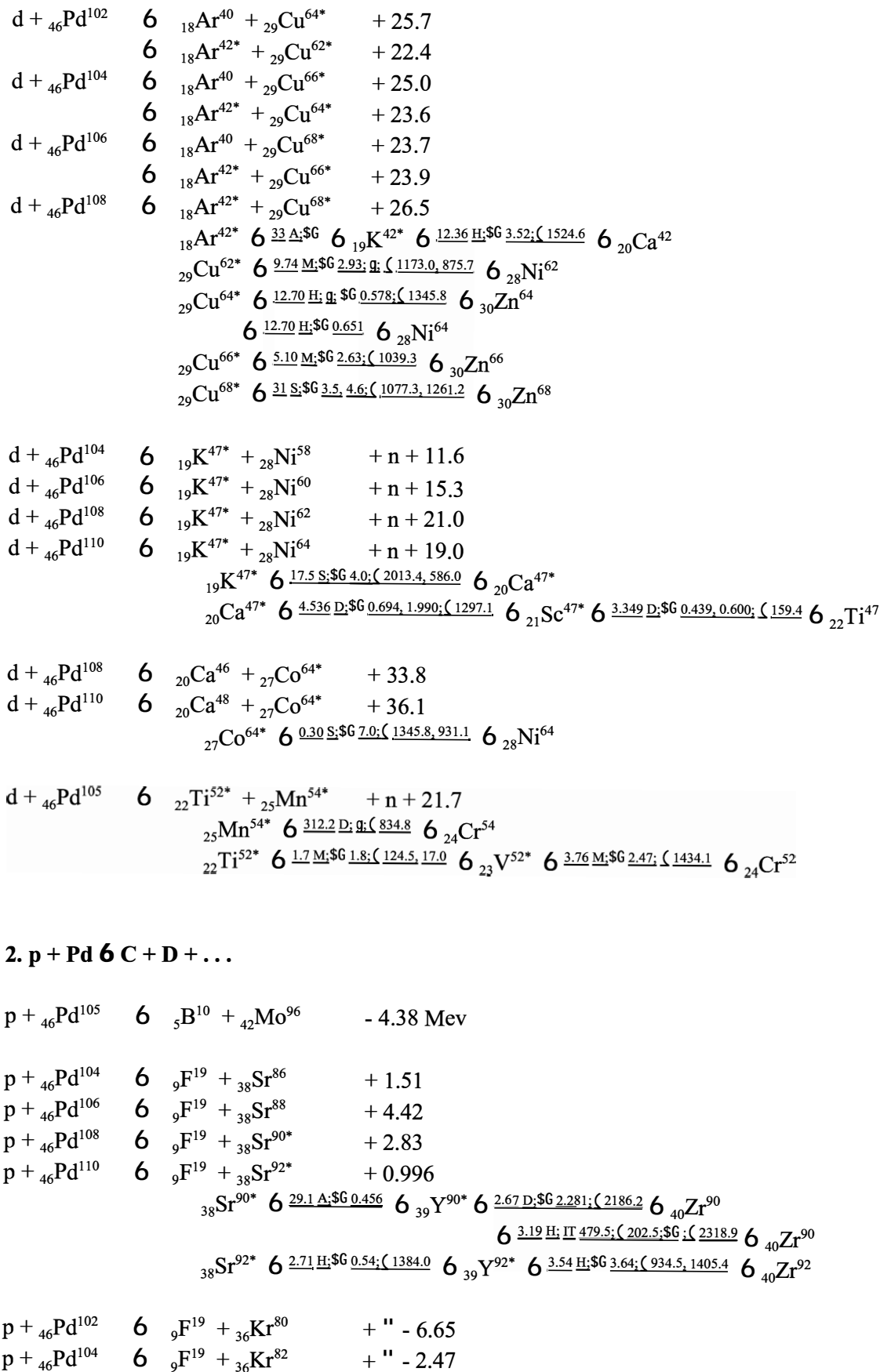
$d + {}_{46}\text{Pd}^{106}$	6	${}_5\text{B}^{12*}$	$+ {}_{42}\text{Mo}^{96}$	$- 1.34$
$d + {}_{46}\text{Pd}^{108}$	6	${}_5\text{B}^{12*}$	$+ {}_{42}\text{Mo}^{98}$	$+ 1.35$
$d + {}_{46}\text{Pd}^{110}$	6	${}_5\text{B}^{12*}$	$+ {}_{42}\text{Mo}^{100}$	$- 2.39$
$d + {}_{46}\text{Pd}^{102}$	6	${}_5\text{B}^{10}$	$+ {}_{42}\text{Mo}^{96}$	$+ n - 6.60$
$d + {}_{46}\text{Pd}^{105}$	6	${}_5\text{B}^{8*}$	$+ {}_{41}\text{Nb}^{98*}$	$+ p - 22.0$
		${}_5\text{B}^{8*}$	6	$\frac{770 \text{ MS}; \$G 14; (")8.359, (2")1.57}{6} {}_4\text{Be}^8$
		${}_5\text{B}^{12*}$	6	$\frac{20.2 \text{ MS}; \$G 13.37; (")0.2}{6} {}_6\text{C}^{12}$
$d + {}_{46}\text{Pd}^{106}$	6	${}_6\text{C}^{10*}$	$+ {}_{41}\text{Nb}^{98*}$	$- 8.96$
$d + {}_{46}\text{Pd}^{108}$	6	${}_6\text{C}^{12}$	$+ {}_{41}\text{Nb}^{98*}$	$+ 10.1$
$d + {}_{46}\text{Pd}^{110}$	6	${}_6\text{C}^{14*}$	$+ {}_{41}\text{Nb}^{98*}$	$- 5.29$
		${}_{41}\text{Nb}^{98*}$	6	$\frac{51 \text{ M}; \$G 2.3, 1.9; (")787.3, 722.7}{6} {}_{42}\text{Mo}^{98}$
			6	$\frac{2.9\text{S}; \$G 4.6; (")787.3, 1024.0}{6} {}_{42}\text{Mo}^{98}$
$d + {}_{46}\text{Pd}^{106}$	6	${}_6\text{C}^{10*}$	$+ {}_{40}\text{Zr}^{97*}$	$+ p - 15.8$
$d + {}_{46}\text{Pd}^{108}$	6	${}_6\text{C}^{12}$	$+ {}_{40}\text{Zr}^{97*}$	$+ p + 3.25$
$d + {}_{46}\text{Pd}^{110}$	6	${}_6\text{C}^{14*}$	$+ {}_{40}\text{Zr}^{97*}$	$+ p - 15.8$
$d + {}_{46}\text{Pd}^{112}$	6	${}_6\text{C}^{16*}$	$+ {}_{40}\text{Zr}^{97*}$	$+ p - 10.2$
$d + {}_{46}\text{Pd}^{108}$	6	${}_6\text{C}^{10*}$	$+ {}_{40}\text{Zr}^{97*}$	$+ t - 20.1$
$d + {}_{46}\text{Pd}^{110}$	6	${}_6\text{C}^{12}$	$+ {}_{40}\text{Zr}^{97*}$	$+ t - 6.22$
$d + {}_{46}\text{Pd}^{112}$	6	${}_6\text{C}^{14*}$	$+ {}_{40}\text{Zr}^{97*}$	$+ t - 7.18$
		${}_6\text{C}^{10*}$	6	$\frac{19.3 \text{ S}; \$G 1.87; (")718.3}{6} {}_5\text{B}^{10}$
		${}_6\text{C}^{14*}$	6	$\frac{5730 \text{ A}; \$G 0.157}{6} {}_7\text{N}^{14}$
		${}_6\text{C}^{16*}$	6	$\frac{0.75 \text{ S}; \$G}{6} {}_7\text{N}^{16*}$
			6	$\frac{7.13 \text{ S}; \$G 4.27, 10.44; (")6129, 7115}{6} {}_8\text{O}^{16}$
		${}_{40}\text{Zr}^{97*}$	6	$\frac{16.8 \text{ H}; \$G 1.92; (")743.3}{6} {}_{41}\text{Nb}^{97*}$
			6	$\frac{1.23 \text{ H}; \$G 1.27; (")658}{6} {}_{42}\text{Mo}^{97}$
$d + {}_{46}\text{Pd}^{102}$	6	${}_7\text{N}^{12*}$	$+ {}_{40}\text{Zr}^{92}$	$- 3.68$
$d + {}_{46}\text{Pd}^{104}$	6	${}_7\text{N}^{12*}$	$+ {}_{40}\text{Zr}^{94}$	$- 6.36$
		${}_7\text{N}^{14}$	$+ {}_{40}\text{Zr}^{92}$	$+ 9.32$
$d + {}_{46}\text{Pd}^{105}$	6	${}_7\text{N}^{14}$	$+ {}_{40}\text{Zr}^{93*}$	$+ 9.0$
		${}_7\text{N}^{12*}$	$+ {}_{40}\text{Zr}^{95*}$	$- 6.96$
$d + {}_{46}\text{Pd}^{106}$	6	${}_7\text{N}^{14}$	$+ {}_{40}\text{Zr}^{94}$	$+ 7.63$
		${}_7\text{N}^{12*}$	$+ {}_{40}\text{Zr}^{96}$	$- 8.68$
$d + {}_{46}\text{Pd}^{108}$	6	${}_7\text{N}^{12*}$	$+ {}_{40}\text{Zr}^{98*}$	$- 9.46$
		${}_7\text{N}^{14}$	$+ {}_{40}\text{Zr}^{96}$	$+ 9.21$
$d + {}_{46}\text{Pd}^{110}$	6	${}_7\text{N}^{14}$	$+ {}_{40}\text{Zr}^{98*}$	$+ 3.21$
		${}_{40}\text{Zr}^{93*}$	6	$\frac{1.5\text{E}6 \text{ A}; \$G 0.060; (")30.4}{6} {}_{41}\text{Nb}^{93}$
		${}_{40}\text{Zr}^{95*}$	6	$\frac{64.02 \text{ D}; \$G 0.366, 0.40; (")756.7, 724.2}{6} {}_{41}\text{Nb}^{95*}$
			6	$\frac{3.61 \text{ D}; \$G 1.16; (")204.1}{6} {}_{42}\text{Mo}^{95}$
			6	$\frac{34.97 \text{ D}; \$G 0.160; (")765.8}{6} {}_{42}\text{Mo}^{95}$
		${}_{40}\text{Zr}^{98*}$	6	$\frac{30.7 \text{ S}; \$G 2.2}{6} {}_{41}\text{Nb}^{98*}$
			6	$\frac{51 \text{ M}; \$G 2.3, 1.9; (")787.3, 722.7}{6} {}_{42}\text{Mo}^{98}$
			6	$\frac{2.9 \text{ S}; \$G 4.6; (")787.3, 1024.0}{6} {}_{42}\text{Mo}^{98}$

$d + {}_{46}\text{Pd}^{105}$	6	${}_{7}\text{N}^{14} + {}_{38}\text{Sr}^{89*}$	$+ "$	$+ 8.63$
$d + {}_{46}\text{Pd}^{106}$	6	${}_{7}\text{N}^{12*} + {}_{38}\text{Sr}^{92*}$	$+ "$	$- 13.6$
	6	${}_{7}\text{N}^{14} + {}_{38}\text{Sr}^{90*}$	$+ "$	$+ 0.597$
$d + {}_{46}\text{Pd}^{108}$	6	${}_{7}\text{N}^{12*} + {}_{38}\text{Sr}^{94*}$	$+ "$	$- 14.4$
	6	${}_{7}\text{N}^{14} + {}_{38}\text{Sr}^{92*}$	$+ "$	$+ 4.25$
$d + {}_{46}\text{Pd}^{110}$	6	${}_{7}\text{N}^{14} + {}_{38}\text{Sr}^{94*}$	$+ "$	$- 1.75$
	6	${}_{7}\text{N}^{12*} \underline{6 \text{ 11.0 M; } \$616.3; (4439; (3'')0.192}$		$6 \text{ } {}_{6}\text{C}^{12}$
$d + {}_{46}\text{Pd}^{102}$	6	${}_{9}\text{F}^{18*} + {}_{38}\text{Sr}^{86}$	$+ "$	$+ 8.85$
$d + {}_{46}\text{Pd}^{104}$	6	${}_{9}\text{F}^{18*} + {}_{38}\text{Sr}^{88}$	$+ "$	$+ 10.6$
$d + {}_{46}\text{Pd}^{105}$	6	${}_{9}\text{F}^{18*} + {}_{38}\text{Sr}^{89*}$	$+ "$	$+ 10.1$
$d + {}_{46}\text{Pd}^{106}$	6	${}_{9}\text{F}^{18*} + {}_{38}\text{Sr}^{90*}$	$+ "$	$+ 8.29$
$d + {}_{46}\text{Pd}^{108}$	6	${}_{9}\text{F}^{18*} + {}_{38}\text{Sr}^{92*}$	$+ "$	$+ 8.66$
$d + {}_{46}\text{Pd}^{110}$	6	${}_{9}\text{F}^{18*} + {}_{38}\text{Sr}^{94*}$	$+ "$	$+ 2.66$
$d + {}_{46}\text{Pd}^{102}$	6	${}_{9}\text{F}^{19} + {}_{38}\text{Sr}^{84}$	$+ n$	$- 3.10$
$d + {}_{46}\text{Pd}^{104}$	6	${}_{9}\text{F}^{19} + {}_{38}\text{Sr}^{86}$	$+ n$	$- 0.71$
$d + {}_{46}\text{Pd}^{106}$	6	${}_{9}\text{F}^{19} + {}_{38}\text{Sr}^{88}$	$+ n$	$+ 2.20$
$d + {}_{46}\text{Pd}^{108}$	6	${}_{9}\text{F}^{19} + {}_{38}\text{Sr}^{90*}$	$+ n$	$+ 3.59$
$d + {}_{46}\text{Pd}^{110}$	6	${}_{9}\text{F}^{19} + {}_{38}\text{Sr}^{92*}$	$+ n$	$- 1.23$
		${}_{38}\text{Sr}^{89*} \underline{6 \text{ 50.52 D; } \$G \text{ 1.49; } (909.2}$		$6 \text{ } {}_{39}\text{Y}^{89}$
		${}_{38}\text{Sr}^{90*} \underline{6 \text{ 29.1 A; } \$G \text{ 0.546}$		$6 \text{ } {}_{39}\text{Y}^{90*} \underline{6 \text{ 2.67 D; } \$G < T \text{ 2.281; } (2186.2}$
				$6 \text{ } {}_{40}\text{Zr}^{90}$
				$\underline{6 \text{ 3.19 H; } IT \text{ 479.5; } (202.5; } \$GT; (2318.9}$
				$6 \text{ } {}_{40}\text{Zr}^{90}$
		${}_{38}\text{Sr}^{92*} \underline{6 \text{ 2.71 H; } \$G \text{ 0.54; } (1384.0}$		$6 \text{ } {}_{39}\text{Y}^{92*} \underline{6 \text{ 3.54 H; } \$G \text{ 3.64; } (934.5, 1405.4}$
				$6 \text{ } {}_{40}\text{Zr}^{92}$
		${}_{38}\text{Sr}^{94*} \underline{6 \text{ 1.25 M; } \$G \text{ 2.08; } (1427.6}$		$6 \text{ } {}_{39}\text{Y}^{94*} \underline{6 \text{ 18.7 M; } \$G \text{ 4.92; } (918.7, 1138.9, 550.9}$
				$6 \text{ } {}_{40}\text{Zr}^{94}$
$d + {}_{46}\text{Pd}^{102}$	6	${}_{9}\text{F}^{18*} + {}_{36}\text{Kr}^{82}$	$+ "$	$+ 2.50$
$d + {}_{46}\text{Pd}^{104}$	6	${}_{9}\text{F}^{18*} + {}_{36}\text{Kr}^{84}$	$+ "$	$+ 2.86$
$d + {}_{46}\text{Pd}^{106}$	6	${}_{9}\text{F}^{18*} + {}_{36}\text{Kr}^{86}$	$+ "$	$+ 3.20$
		${}_{9}\text{F}^{18*} \underline{6 \text{ 1.830 H; } \$G \text{ 0.635; } q}$		$6 \text{ } {}_{8}\text{O}^{18}$
$d + {}_{46}\text{Pd}^{102}$	6	${}_{10}\text{Ne}^{24*} + {}_{37}\text{Rb}^{80*}$	$+ "$	$+ 3.29$
	6	${}_{10}\text{Ne}^{22*} + {}_{37}\text{Rb}^{82*}$	$+ "$	$+ 5.90$
$d + {}_{46}\text{Pd}^{104}$	6	${}_{10}\text{Ne}^{24*} + {}_{37}\text{Rb}^{82*}$	$+ "$	$+ 7.94$
		${}_{37}\text{Rb}^{80*} \underline{6 \text{ 34 S; } \$G \text{ 4.1; } q; (616.6}$		$6 \text{ } {}_{36}\text{Kr}^{80}$
		${}_{37}\text{Rb}^{82*} \underline{6 \text{ 6.47 H; } q; \$G \text{ 0.80; } (776.5, 554.3, 619.1}$		$6 \text{ } {}_{36}\text{Kr}^{82}$
		$\underline{6 \text{ 1.258 M; } \$G \text{ 3.4; } q; (776.5}$		$6 \text{ } {}_{36}\text{Kr}^{82}$
$d + {}_{46}\text{Pd}^{102}$	6	${}_{10}\text{Ne}^{19*} + {}_{36}\text{Kr}^{84}$	$+ p$	$- 14.0$
$d + {}_{46}\text{Pd}^{104}$	6	${}_{10}\text{Ne}^{19*} + {}_{36}\text{Kr}^{86}$	$+ p$	$- 2.06$
$d + {}_{46}\text{Pd}^{104}$	6	${}_{10}\text{Ne}^{19*} + {}_{36}\text{Kr}^{88*}$	$+ p$	$- 6.10$

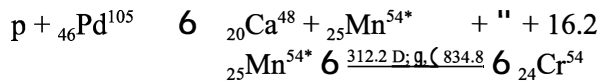
$d + {}_{46}\text{Pd}^{104}$	6	${}_{10}\text{Ne}^{19*} + {}_{36}\text{Kr}^{84}$	$+ t - 10.5$
$d + {}_{46}\text{Pd}^{106}$	6	${}_{10}\text{Ne}^{19*} + {}_{36}\text{Kr}^{86}$	$+ t - 9.85$
$d + {}_{46}\text{Pd}^{108}$	6	${}_{10}\text{Ne}^{19*} + {}_{36}\text{Kr}^{88*}$	$+ t - 10.4$
		${}_{36}\text{Kr}^{88*}$	6 <u>2.84 H; \$G 0.52, 2.9; C 2392.1, 196.3</u> 6 ${}_{37}\text{Rb}^{88*}$ 6 <u>17.1 M; \$G 5.31; C 1836.1, 898.1</u> 6 ${}_{38}\text{Sr}^{88}$
$d + {}_{46}\text{Pd}^{104}$	6	${}_{10}\text{Ne}^{24*} + {}_{35}\text{Br}^{78*}$	$+ '' + 0.74$
	6	${}_{10}\text{Ne}^{22} + {}_{35}\text{Br}^{80*}$	$+ '' + 5.21$
$d + {}_{46}\text{Pd}^{105}$	6	${}_{10}\text{Ne}^{23} + {}_{35}\text{Br}^{80*}$	$+ '' + 3.33$
$d + {}_{46}\text{Pd}^{106}$	6	${}_{10}\text{Ne}^{24*} + {}_{35}\text{Br}^{80*}$	$+ '' + 2.68$
		${}_{10}\text{Ne}^{19*}$	6 <u>17.22 S; \$G 2.24; q; C 109.9, 1356.8</u> 6 ${}_{9}\text{F}^{19}$
		${}_{10}\text{Ne}^{24*}$	6 <u>3.38 M; \$G 1.98; C 427.3</u> 6 ${}_{11}\text{Na}^{24*}$
		${}_{11}\text{Na}^{24*}$	6 <u>14.96 H; \$G 1.391; C 1368.6, 2754.0</u> 6 ${}_{12}\text{Mg}^{24}$
			6 <u>20.2 MS; IT 472.3; \$G ~6</u> 6 ${}_{12}\text{Mg}^{24}$
$d + {}_{46}\text{Pd}^{102}$	6	${}_{12}\text{Mg}^{26} + {}_{35}\text{Br}^{78*}$	$+ 14.9$
$d + {}_{46}\text{Pd}^{104}$	6	${}_{12}\text{Mg}^{26} + {}_{35}\text{Br}^{80*}$	$+ 15.8$
	6	${}_{12}\text{Mg}^{28*} + {}_{35}\text{Br}^{78*}$	$+ 12.2$
$d + {}_{46}\text{Pd}^{106}$	6	${}_{12}\text{Mg}^{28*} + {}_{35}\text{Br}^{80*}$	$+ 14.1$
		${}_{35}\text{Br}^{78*}$	6 <u>6.45 M; \$G 2.5; q; C 613.7</u> 6 ${}_{34}\text{Se}^{78}$
			6 <u>6.45 M; \$G 1.0; T</u> 6 ${}_{36}\text{Kr}^{78}$
		${}_{35}\text{Br}^{80*}$	6 <u>17.66 M; \$G 2.00; C 616.6</u> 6 ${}_{36}\text{Kr}^{80}$
			6 <u>17.66 M; q; \$G 0.85; C 665.9</u> 6 ${}_{34}\text{Se}^{80}$
$d + {}_{46}\text{Pd}^{104}$	6	${}_{12}\text{Mg}^{27*} + {}_{34}\text{Se}^{78}$	$+ p + 8.05$
$d + {}_{46}\text{Pd}^{106}$	6	${}_{12}\text{Mg}^{27*} + {}_{34}\text{Se}^{80}$	$+ p + 8.29$
$d + {}_{46}\text{Pd}^{108}$	6	${}_{12}\text{Mg}^{27*} + {}_{34}\text{Se}^{82}$	$+ p + 11.5$
$d + {}_{46}\text{Pd}^{106}$	6	${}_{12}\text{Mg}^{27*} + {}_{34}\text{Se}^{78}$	$+ t - 0.105$
$d + {}_{46}\text{Pd}^{108}$	6	${}_{12}\text{Mg}^{27*} + {}_{34}\text{Se}^{80}$	$+ t + 4.00$
$d + {}_{46}\text{Pd}^{110}$	6	${}_{12}\text{Mg}^{27*} + {}_{34}\text{Se}^{82}$	$+ t + 2.02$
$d + {}_{46}\text{Pd}^{106}$	6	${}_{12}\text{Mg}^{24} + {}_{33}\text{As}^{80*}$	$+ '' + 6.50$
$d + {}_{46}\text{Pd}^{108}$	6	${}_{12}\text{Mg}^{26} + {}_{33}\text{As}^{80*}$	$+ '' + 12.2$
$d + {}_{46}\text{Pd}^{110}$	6	${}_{12}\text{Mg}^{28*} + {}_{33}\text{As}^{80*}$	$+ '' + 9.15$
		${}_{12}\text{Mg}^{22*}$	6 <u>3.86 S; \$G 3.1; C 582, 72.9</u> 6 ${}_{11}\text{Na}^{22*}$ 6 <u>2.605 A; \$G 0.546, q; C 1274.5</u> 6 ${}_{10}\text{Ne}^{22}$
		${}_{12}\text{Mg}^{27*}$	6 <u>9.45 M; \$G 1.75, 1.59; q; C 843.8, 1014.4</u> 6 ${}_{13}\text{Al}^{27}$
		${}_{12}\text{Mg}^{28*}$	6 <u>21.0 H; \$G 0.459; C 30.6, 1342.3</u> 6 ${}_{13}\text{Al}^{28*}$ 6 <u>2.25 M; \$G 2.86; C 1179.0</u> 6 ${}_{14}\text{Si}^{28}$
$d + {}_{46}\text{Pd}^{104}$	6	${}_{14}\text{Si}^{26*} + {}_{33}\text{As}^{80*}$	$+ 2.63$
$d + {}_{46}\text{Pd}^{105}$	6	${}_{14}\text{Si}^{27*} + {}_{33}\text{As}^{80*}$	$+ 8.86$
$d + {}_{46}\text{Pd}^{106}$	6	${}_{14}\text{Si}^{28*} + {}_{33}\text{As}^{80*}$	$+ 16.5$
$d + {}_{46}\text{Pd}^{108}$	6	${}_{14}\text{Si}^{30} + {}_{33}\text{As}^{80*}$	$+ 22.8$
$d + {}_{46}\text{Pd}^{110}$	6	${}_{14}\text{Si}^{32*} + {}_{33}\text{As}^{80*}$	$+ 20.6$
		${}_{33}\text{As}^{80*}$	6 <u>16 S; \$G 5.4, 4.7; C 665.9</u> 6 ${}_{34}\text{Se}^{80}$

$d + {}_{46}\text{Pd}^{104}$	6	${}_{14}\text{Si}^{29} + {}_{32}\text{Ge}^{76}$	$+ p + 11.5$
$d + {}_{46}\text{Pd}^{106}$	6	${}_{14}\text{Si}^{29} + {}_{32}\text{Ge}^{78*}$	$+ p + 9.62$
$d + {}_{46}\text{Pd}^{106}$	6	${}_{14}\text{Si}^{29} + {}_{32}\text{Ge}^{76}$	$+ t + 3.39$
$d + {}_{46}\text{Pd}^{108}$	6	${}_{14}\text{Si}^{29} + {}_{32}\text{Ge}^{78*}$	$+ t + 5.33$
$d + {}_{46}\text{Pd}^{102}$	6	${}_{14}\text{Si}^{30} + {}_{31}\text{Ga}^{70*}$	$+ \text{"} + 16.12$
	6	${}_{14}\text{Si}^{32*} + {}_{31}\text{Ga}^{68*}$	$+ \text{"} + 14.0$
$d + {}_{46}\text{Pd}^{104}$	6	${}_{14}\text{Si}^{32*} + {}_{31}\text{Ga}^{70*}$	$+ \text{"} + 14.3$
		${}_{14}\text{Si}^{26*}$ 6 <u>2.23 S; \$G 3.83; C 829</u> 6 ${}_{13}\text{Al}^{26*}$ 6 <u>6.345 S; \$G 3.21</u> 6 ${}_{12}\text{Mg}^{26}$	
			6 <u>7.3E5 A; \$G 1.17; q; C 1808.6</u> 6 ${}_{12}\text{Mg}^{26}$
		${}_{14}\text{Si}^{27*}$ 6 <u>4.14 S; \$G 3.85; C 2210</u> 6 ${}_{13}\text{Al}^{27}$	
		${}_{14}\text{Si}^{32*}$ 6 <u>1.0E2 A; \$G 0.221</u> 6 ${}_{15}\text{P}^{32*}$ 6 <u>14.28 D; \$G 1.709</u> 6 ${}_{16}\text{S}^{32}$	
		${}_{31}\text{Ga}^{68*}$ 6 <u>1.130 H; \$G 1.899; q; C 1077.3</u> 6 ${}_{30}\text{Zn}^{68}$	
		${}_{31}\text{Ga}^{70*}$ 6 <u>21.1 M; \$G 1.65; C 1039, 176.2</u> 6 ${}_{32}\text{Ge}^{70}$	
		${}_{33}\text{As}^{80*}$ 6 <u>16 S; \$G 5.4, 4.7; 665.9</u> 6 ${}_{34}\text{Se}^{80}$	
$d + {}_{46}\text{Pd}^{102}$	6	${}_{15}\text{P}^{30*} + {}_{32}\text{Ge}^{74}$	$+ 23.1$
	6	${}_{15}\text{P}^{32*} + {}_{32}\text{Ge}^{72}$	$+ 22.1$
	6	${}_{15}\text{P}^{34*} + {}_{32}\text{Ge}^{70}$	$+ 20.6$
$d + {}_{46}\text{Pd}^{104}$	6	${}_{15}\text{P}^{30*} + {}_{32}\text{Ge}^{76}$	$+ 21.4$
	6	${}_{15}\text{P}^{32*} + {}_{32}\text{Ge}^{74}$	$+ 21.5$
	6	${}_{15}\text{P}^{34*} + {}_{32}\text{Ge}^{72}$	$+ 21.1$
$d + {}_{46}\text{Pd}^{106}$	6	${}_{15}\text{P}^{30*} + {}_{32}\text{Ge}^{78*}$	$+ 19.4$
	6	${}_{15}\text{P}^{32*} + {}_{32}\text{Ge}^{76}$	$+ 20.8$
	6	${}_{15}\text{P}^{34*} + {}_{32}\text{Ge}^{74}$	$+ 21.5$
$d + {}_{46}\text{Pd}^{108}$	6	${}_{15}\text{P}^{32*} + {}_{32}\text{Ge}^{78*}$	$+ 22.7$
	6	${}_{15}\text{P}^{34*} + {}_{32}\text{Ge}^{76}$	$+ 24.7$
$d + {}_{46}\text{Pd}^{110}$	6	${}_{15}\text{P}^{34*} + {}_{32}\text{Ge}^{78*}$	$+ 21.4$
$d + {}_{46}\text{Pd}^{102}$	6	${}_{15}\text{P}^{29*} + {}_{32}\text{Ge}^{74}$	$+ n + 7.51$
	6	${}_{15}\text{P}^{31} + {}_{32}\text{Ge}^{72}$	$+ n + 14.2$
	6	${}_{15}\text{P}^{33*} + {}_{32}\text{Ge}^{70}$	$+ n + 14.1$
$d + {}_{46}\text{Pd}^{104}$	6	${}_{15}\text{P}^{29*} + {}_{32}\text{Ge}^{76}$	$+ n + 5.82$
	6	${}_{15}\text{P}^{31} + {}_{32}\text{Ge}^{74}$	$+ n + 13.5$
	6	${}_{15}\text{P}^{33*} + {}_{32}\text{Ge}^{72}$	$+ n + 14.6$
$d + {}_{46}\text{Pd}^{105}$	6	${}_{15}\text{P}^{28*} + {}_{32}\text{Ge}^{78*}$	$+ n - 4.42$
$d + {}_{46}\text{Pd}^{106}$	6	${}_{15}\text{P}^{29*} + {}_{32}\text{Ge}^{78*}$	$+ n + 3.89$
	6	${}_{15}\text{P}^{31} + {}_{32}\text{Ge}^{76}$	$+ n + 12.8$
	6	${}_{15}\text{P}^{33*} + {}_{32}\text{Ge}^{74}$	$+ n + 15.0$
$d + {}_{46}\text{Pd}^{108}$	6	${}_{15}\text{P}^{31} + {}_{32}\text{Ge}^{78*}$	$+ n + 14.8$
	6	${}_{15}\text{P}^{33*} + {}_{32}\text{Ge}^{76}$	$+ n + 18.1$

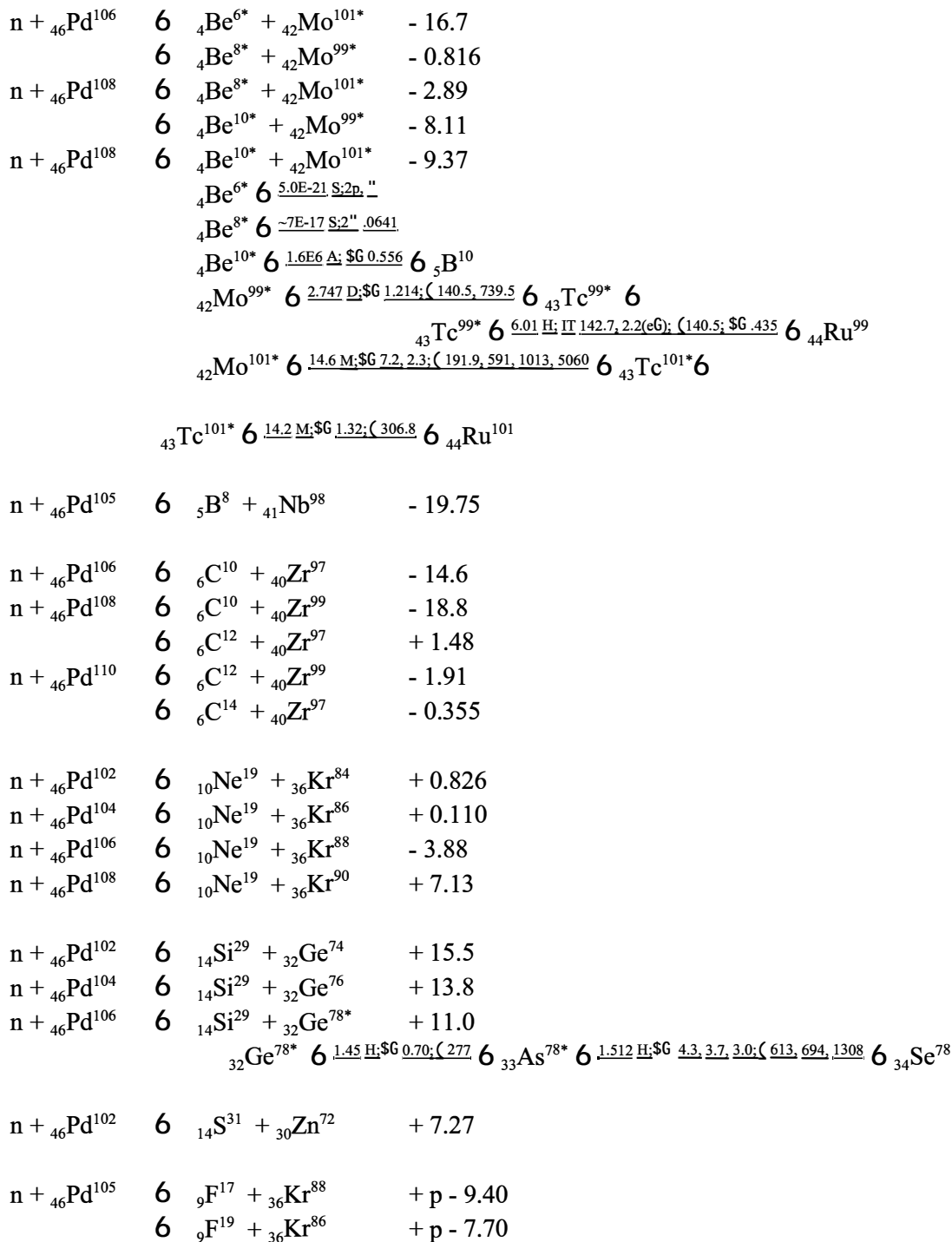




$p + {}_{46}\text{Pd}^{106}$	6	${}_9\text{F}^{19} + {}_{36}\text{Kr}^{84}$	$+ "$	$- 1.12$
$p + {}_{46}\text{Pd}^{108}$	6	${}_9\text{F}^{19} + {}_{36}\text{Kr}^{86}$	$+ "$	$+ 0.10$
$p + {}_{46}\text{Pd}^{110}$	6	${}_9\text{F}^{19} + {}_{36}\text{Kr}^{88*}$	$+ "$	$- 2.29$
		${}_{36}\text{Kr}^{88*}$	6	$\frac{2.84 \text{ H}; \$\text{G } 0.52, 2.9; (\text{C } 2392.1, 196.3)}{}$
			6	${}_{37}\text{Rb}^{88*}$
			6	$\frac{17.7 \text{ M}; \$\text{G } 5.31; (\text{C } 1836.1, 898.1)}{}$
			6	${}_{38}\text{Sr}^{88}$
$p + {}_{46}\text{Pd}^{105}$	6	${}_{11}\text{Na}^{22*} + {}_{36}\text{Kr}^{84}$	$+ 6.49$	
$p + {}_{46}\text{Pd}^{105}$	6	${}_{11}\text{Na}^{22*} + {}_{34}\text{Se}^{80}$	$+ "$	$- 0.61$
		${}_{11}\text{Na}^{22*}$	6	$\frac{2.605 \text{ A}; \$\text{G } 0.546, \text{q}; (\text{C } 1274.5)}{}$
			6	${}_{10}\text{Ne}^{22}$
$p + {}_{46}\text{Pd}^{105}$	6	${}_{13}\text{Al}^{28*} + {}_{34}\text{Se}^{78}$	$+ 12.8$	
$p + {}_{46}\text{Pd}^{105}$	6	${}_{13}\text{Al}^{28*} + {}_{32}\text{Ge}^{74}$	$+ "$	$+ 6.72$
		${}_{13}\text{Al}^{28*}$	6	$\frac{2.25 \text{ M}; \$\text{G } 2.86, \text{q}; (\text{C } 1779.0)}{}$
			6	${}_{14}\text{Si}^{28}$
$p + {}_{46}\text{Pd}^{102}$	6	${}_{15}\text{P}^{29*} + {}_{32}\text{Ge}^{74}$	$+ 9.73$	
$p + {}_{46}\text{Pd}^{102}$	6	${}_{15}\text{P}^{31} + {}_{32}\text{Ge}^{72}$	$+ 16.4$	
$p + {}_{46}\text{Pd}^{102}$	6	${}_{15}\text{P}^{33*} + {}_{32}\text{Ge}^{70}$	$+ 14.3$	
$p + {}_{46}\text{Pd}^{104}$	6	${}_{15}\text{P}^{29*} + {}_{32}\text{Ge}^{76}$	$+ 8.04$	
$p + {}_{46}\text{Pd}^{104}$	6	${}_{15}\text{P}^{31} + {}_{32}\text{Ge}^{74}$	$+ 15.7$	
$p + {}_{46}\text{Pd}^{104}$	6	${}_{15}\text{P}^{33*} + {}_{32}\text{Ge}^{72}$	$+ 14.8$	
$p + {}_{46}\text{Pd}^{105}$	6	${}_{15}\text{P}^{28*} + {}_{32}\text{Ge}^{78*}$	$- 2.19$	
$p + {}_{46}\text{Pd}^{106}$	6	${}_{15}\text{P}^{29*} + {}_{32}\text{Ge}^{78*}$	$+ 6.12$	
$p + {}_{46}\text{Pd}^{106}$	6	${}_{15}\text{P}^{31} + {}_{32}\text{Ge}^{76}$	$+ 15.0$	
$p + {}_{46}\text{Pd}^{106}$	6	${}_{15}\text{P}^{33*} + {}_{32}\text{Ge}^{74}$	$+ 15.1$	
$p + {}_{46}\text{Pd}^{108}$	6	${}_{15}\text{P}^{31} + {}_{32}\text{Ge}^{78*}$	$+ 13.9$	
$p + {}_{46}\text{Pd}^{108}$	6	${}_{15}\text{P}^{33*} + {}_{32}\text{Ge}^{76}$	$+ 15.3$	
$p + {}_{46}\text{Pd}^{110}$	6	${}_{15}\text{P}^{33*} + {}_{32}\text{Ge}^{78*}$	$+ 10.2$	
		${}_{15}\text{P}^{28*}$	6	$\frac{0.270 \text{ S}; \$\text{G } 11.5; (\text{C } 1779.0)}{}$
			6	${}_{14}\text{Si}^{28}$
		${}_{15}\text{P}^{29*}$	6	$\frac{4.14 \text{ S}; \$\text{G } 3.94; (\text{C } 1273.4, 2425.9)}{}$
			6	${}_{14}\text{Si}^{29}$
		${}_{15}\text{P}^{33*}$	6	$\frac{25.3 \text{ D}; \$\text{G } 0.249}{}$
			6	${}_{16}\text{S}^{33}$
		${}_{32}\text{Ge}^{78*}$	6	$\frac{1.45 \text{ H}; \$\text{G } 0.70; (\text{C } 277)}{}$
			6	${}_{33}\text{As}^{78*}$
			6	$\frac{1.512 \text{ H}; \$\text{G } 4.3, 3.7, 1.7, 3.0; (\text{C } 613.7, 694.9, 1308.7)}{}$
			6	${}_{34}\text{Se}^{78}$
$p + {}_{46}\text{Pd}^{105}$	6	${}_{21}\text{Sc}^{52*} + {}_{26}\text{Fe}^{54}$	$+ 29.1$	
		${}_{21}\text{Sc}^{52*}$	6	$\frac{8.2 \text{ S}; \$\text{G } 7.0, 4.6; (\text{C } 1049.7, 1267.9)}{}$
			6	${}_{22}\text{Ti}^{52*}$
			6	$\frac{1.7 \text{ M}; \$\text{G } 1.8; (\text{C } 124.5, 17.0)}{}$
			6	${}_{23}\text{V}^{52*}$
			6	${}_{23}\text{V}^{52*}$
			6	$\frac{3.76 \text{ M}; \$\text{G } 2.47; (\text{C } 1434.1)}{}$
			6	${}_{24}\text{Cr}^{52}$
$p + {}_{46}\text{Pd}^{105}$	6	${}_{15}\text{P}^{34} + {}_{31}\text{Ga}^{70}$	$+ d$	$+ 0.524$
$p + {}_{46}\text{Pd}^{105}$	6	${}_{23}\text{V}^{52*} + {}_{24}\text{Cr}^{54}$	$+ 27.2$	
		${}_{23}\text{V}^{52*}$	6	$\frac{3.76 \text{ M}; \$\text{G } 2.47; (\text{C } 1434.1)}{}$
			6	${}_{24}\text{Cr}^{52}$
$p + {}_{46}\text{Pd}^{105}$	6	${}_{22}\text{Ti}^{52*} + {}_{25}\text{Mn}^{54*}$	$+ 23.9$	
		${}_{22}\text{Ti}^{52*}$	6	$\frac{1.7 \text{ M}; \$\text{G } 1.8; (\text{C } 124.5)}{}$
			6	${}_{23}\text{V}^{52*}$
			6	$\frac{3.76 \text{ M}; \$\text{G } 2.47; (\text{C } 1434.1)}{}$
			6	${}_{24}\text{Cr}^{52}$



3. n + Pd 6 C + D + ...



$n + {}_{46}\text{Pd}^{105}$	6	${}_{11}\text{Na}^{25} + {}_{34}\text{Se}^{80}$	$+ p - 0.517$
$n + {}_{46}\text{Pd}^{105}$	6	${}_{13}\text{Al}^{29} + {}_{32}\text{Ge}^{76}$	$+ p + 3.80$
$n + {}_{46}\text{Pd}^{104}$	6	${}_{4}\text{Be}^{11*} + {}_{30}\text{Zr}^{90}$	$+ " - 15.2$
$n + {}_{46}\text{Pd}^{106}$	6	${}_{4}\text{Be}^{11*} + {}_{30}\text{Zr}^{92}$	$+ " - 14.5$
$n + {}_{46}\text{Pd}^{108}$	6	${}_{4}\text{Be}^{11*} + {}_{30}\text{Zr}^{94}$	$+ " - 18.6$
$n + {}_{46}\text{Pd}^{110}$	6	${}_{4}\text{Be}^{11*} + {}_{30}\text{Zr}^{96}$	$+ " - 15.0$
		${}_{4}\text{Be}^{11*}$	6 <u>13.8 S; \$G 11.5, 9.4; (2124.6</u> 6 ${}_{5}\text{B}^{11}$
$n + {}_{46}\text{Pd}^{102}$	6	${}_{10}\text{Ne}^{19} + {}_{34}\text{Se}^{80}$	$+ " - 6.28$
$n + {}_{46}\text{Pd}^{104}$	6	${}_{10}\text{Ne}^{19} + {}_{34}\text{Se}^{82}$	$+ " - 7.93$
$n + {}_{46}\text{Pd}^{106}$	6	${}_{10}\text{Ne}^{19} + {}_{34}\text{Se}^{84}$	$+ " - 10.1$

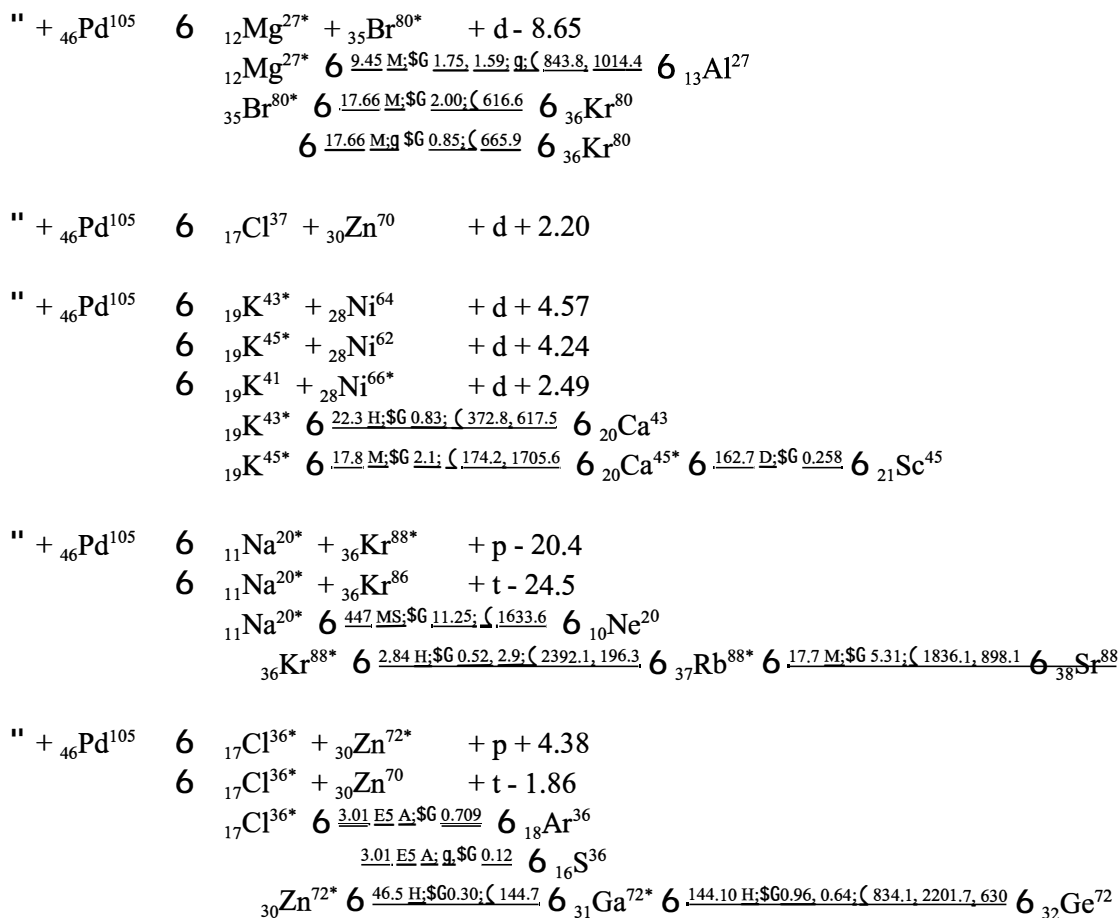
4. " + Pd 6 C + D + ...

" + ${}_{46}\text{Pd}^{102}$	6	${}_{4}\text{Be}^{6*} + {}_{44}\text{Ru}^{100}$	$- 14.4$				
" + ${}_{46}\text{Pd}^{104}$	6	${}_{4}\text{Be}^{6*} + {}_{44}\text{Ru}^{102}$	$- 16.3$				
" + ${}_{46}\text{Pd}^{105}$	6	${}_{4}\text{Be}^{6*} + {}_{44}\text{Ru}^{103}$	$- 17.1$				
	6	${}_{4}\text{Be}^{8*} + {}_{44}\text{Ru}^{101}$	$- 3.00$				
	6	${}_{4}\text{Be}^{10*} + {}_{44}\text{Ru}^{99}$	$- 11.0$				
" + ${}_{46}\text{Pd}^{106}$	6	${}_{4}\text{Be}^{6*} + {}_{44}\text{Ru}^{104}$	$- 17.8$				
		${}_{4}\text{Be}^{6*}$	6 <u>5.0E-21 S; 2p."</u>				
		${}_{4}\text{Be}^{8*}$	6 <u>~7E-17 S; 2" .0641</u>				
		${}_{4}\text{Be}^{10*}$	6 <u>1.6E6 A; \$G 0.556</u> 6 ${}_{5}\text{B}^{10}$				
" + ${}_{46}\text{Pd}^{102}$	6	${}_{6}\text{C}^{10*} + {}_{42}\text{Mo}^{96}$	$- 12.8$	" + ${}_{46}\text{Pd}^{104}$	6	${}_{6}\text{C}^{10*} + {}_{42}\text{Mo}^{98}$	$- 17.6$
	6	${}_{6}\text{C}^{12} + {}_{42}\text{Mo}^{94}$	$- 2.91$		6	${}_{6}\text{C}^{12} + {}_{42}\text{Mo}^{96}$	$- 1.81$
	6	${}_{6}\text{C}^{14*} + {}_{42}\text{Mo}^{92}$	$- 1.72$		6	${}_{6}\text{C}^{14*} + {}_{42}\text{Mo}^{94}$	$- 1.60$
	6	${}_{6}\text{C}^{16*} + {}_{42}\text{Mo}^{90}$	$- 18.7$		6	${}_{6}\text{C}^{16*} + {}_{42}\text{Mo}^{92}$	$- 13.9$
" + ${}_{46}\text{Pd}^{106}$	6	${}_{6}\text{C}^{10*} + {}_{42}\text{Mo}^{100}$	$- 17.0$	" + ${}_{46}\text{Pd}^{108}$	6	${}_{6}\text{C}^{10*} + {}_{42}\text{Mo}^{102}$	$- 19.2$
	6	${}_{6}\text{C}^{12} + {}_{42}\text{Mo}^{98}$	$- 0.630$		6	${}_{6}\text{C}^{12} + {}_{42}\text{Mo}^{100}$	$- 0.916$
	6	${}_{6}\text{C}^{14*} + {}_{42}\text{Mo}^{96}$	$- 1.70$		6	${}_{6}\text{C}^{14*} + {}_{42}\text{Mo}^{98}$	$- 2.01$
	6	${}_{6}\text{C}^{16*} + {}_{42}\text{Mo}^{94}$	$- 12.8$		6	${}_{6}\text{C}^{16*} + {}_{42}\text{Mo}^{96}$	$- 12.0$
" + ${}_{46}\text{Pd}^{110}$	6	${}_{6}\text{C}^{10*} + {}_{42}\text{Mo}^{104}$	$- 21.4$				
	6	${}_{6}\text{C}^{12} + {}_{42}\text{Mo}^{102}$	$- 2.32$				
	6	${}_{6}\text{C}^{14*} + {}_{42}\text{Mo}^{100}$	$- 2.75$				
	6	${}_{6}\text{C}^{16*} + {}_{42}\text{Mo}^{98}$	$- 11.5$				
		${}_{6}\text{C}^{10*}$	6 <u>19.3S; \$G 1.87; (718.3</u> 6 ${}_{5}\text{B}^{10}$				
		${}_{6}\text{C}^{14*}$	6 <u>5730 A; \$G 0.157</u> 6 ${}_{7}\text{N}^{14}$				
		${}_{6}\text{C}^{16*}$	6 <u>0.75 S; \$G</u> 6 ${}_{7}\text{N}^{16*}$ 6 <u>7.13 S; \$G 4.27, 10.44; (6129, 7115</u> 6 ${}_{8}\text{O}^{16}$				
" + ${}_{46}\text{Pd}^{102}$	6	${}_{8}\text{O}^{14*} + {}_{40}\text{Zr}^{92}$	$- 5.06$	" + ${}_{46}\text{Pd}^{104}$	6	${}_{8}\text{O}^{14*} + {}_{40}\text{Zr}^{94}$	$- 7.73$

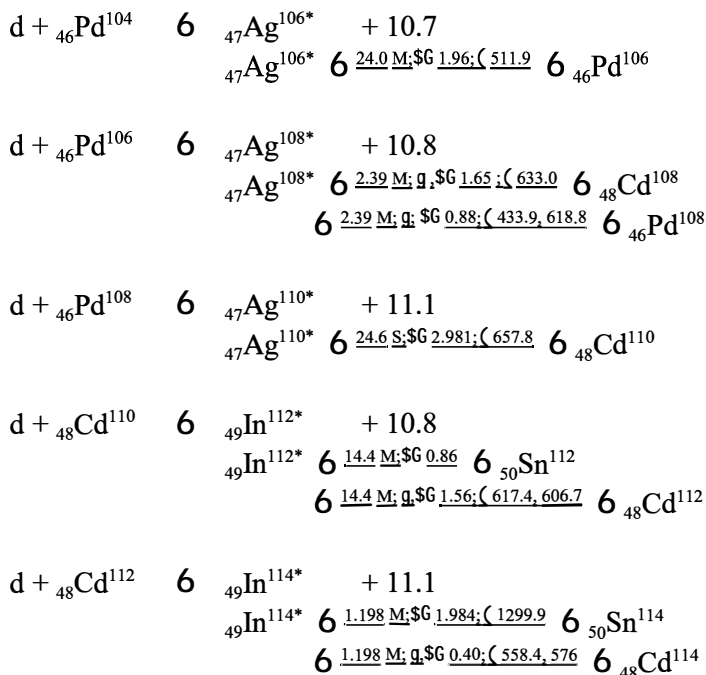
	$6 \text{ } ^8\text{O}^{16} + \text{}_{40}\text{Zr}^{90}$	- 10.4		$6 \text{ } ^8\text{O}^{16} + \text{}_{40}\text{Zr}^{92}$	- 12.2
	$6 \text{ } ^8\text{O}^{18} + \text{}_{40}\text{Zr}^{88*}$	- 1.11		$6 \text{ } ^8\text{O}^{18} + \text{}_{40}\text{Zr}^{90}$	+ 2.56
	$6 \text{ } ^8\text{O}^{20*} + \text{}_{40}\text{Zr}^{86*}$	- 11.37		$6 \text{ } ^8\text{O}^{20*} + \text{}_{40}\text{Zr}^{88}$	- 7.18
" + ${}_{46}\text{Pd}^{105}$	$6 \text{ } ^8\text{O}^{14} + \text{}_{40}\text{Zr}^{95*}$	- 8.33	" + ${}_{46}\text{Pd}^{106}$	$6 \text{ } ^8\text{O}^{14*} + \text{}_{40}\text{Zr}^{96}$	- 10.1
	$6 \text{ } ^8\text{O}^{16} + \text{}_{40}\text{Zr}^{93*}$	- 12.5		$6 \text{ } ^8\text{O}^{16} + \text{}_{40}\text{Zr}^{94}$	- 13.9
	$6 \text{ } ^8\text{O}^{18} + \text{}_{40}\text{Zr}^{91}$	- 2.69		$6 \text{ } ^8\text{O}^{18} + \text{}_{40}\text{Zr}^{92}$	+ 1.75
	$6 \text{ } ^8\text{O}^{19} + \text{}_{40}\text{Zr}^{90}$	- 0.557		$6 \text{ } ^8\text{O}^{20*} + \text{}_{40}\text{Zr}^{90}$	- 2.51
" + ${}_{46}\text{Pd}^{108}$	$6 \text{ } ^8\text{O}^{14} + \text{}_{40}\text{Zr}^{98}$	- 13.8	" + ${}_{46}\text{Pd}^{110}$	$6 \text{ } ^8\text{O}^{16} + \text{}_{40}\text{Zr}^{98}$	- 18.3
	$6 \text{ } ^8\text{O}^{16} + \text{}_{40}\text{Zr}^{96}$	- 15.4		$6 \text{ } ^8\text{O}^{18*} + \text{}_{40}\text{Zr}^{96}$	+ 0.290
	$6 \text{ } ^8\text{O}^{18} + \text{}_{40}\text{Zr}^{94}$	+ 0.945		$6 \text{ } ^8\text{O}^2 + \text{}_{40}\text{Zr}^{94}$	- 2.45
	$6 \text{ } ^8\text{O}^{20*} + \text{}_{40}\text{Zr}^{92}$	- 2.40			
	${}^8\text{O}^{14*}$ $6 \text{ } \frac{70.60 \text{ S}; \$G 1.81; (2312.7)}{6 \text{ } ^7\text{N}^{14}}$				
	${}^8\text{O}^{20*}$ $6 \text{ } \frac{13.5 \text{ S}; \$G 2.75; (1056.8)}{6 \text{ } ^9\text{F}^{20*}}$ $6 \text{ } \frac{11.0 \text{ S}; \$G 5.40; (1633.6)}{6 \text{ } ^{10}\text{Ne}^{20}}$				
" + ${}_{46}\text{Pd}^{102}$	$6 \text{ } ^{10}\text{Ne}^{24*} + \text{}_{38}\text{Sr}^{82}$	- 3.97	" + ${}_{46}\text{Pd}^{104}$	$6 \text{ } ^{10}\text{Ne}^{24*} + \text{}_{38}\text{Sr}^{84}$	- 0.398
	$6 \text{ } ^{10}\text{Ne}^{22} + \text{}_{38}\text{Sr}^{84}$	+ 3.16		$6 \text{ } ^{10}\text{Ne}^{22} + \text{}_{38}\text{Sr}^{86}$	+ 5.55
	$6 \text{ } ^{10}\text{Ne}^{20} + \text{}_{38}\text{Sr}^{86}$	+ 6.05		$6 \text{ } ^{10}\text{Ne}^{20} + \text{}_{38}\text{Sr}^{88}$	- 7.96
	$6 \text{ } ^{10}\text{Ne}^{18*} + \text{}_{38}\text{Sr}^{88}$	- 2.92		$6 \text{ } ^{10}\text{Ne}^{18*} + \text{}_{38}\text{Sr}^{90*}$	- 6.38
" + ${}_{46}\text{Pd}^{105}$	$6 \text{ } ^{10}\text{Ne}^{23} + \text{}_{38}\text{Sr}^{86}$	+ 3.67	" + ${}_{46}\text{Pd}^{106}$	$6 \text{ } ^{10}\text{Ne}^{24*} + \text{}_{38}\text{Sr}^{86}$	+ 2.98
	$6 \text{ } ^{10}\text{Ne}^{20} + \text{}_{38}\text{Sr}^{89*}$	+ 7.25		$6 \text{ } ^{10}\text{Ne}^{22} + \text{}_{38}\text{Sr}^{88}$	+ 8.46
	$6 \text{ } ^{10}\text{Ne}^{18} + \text{}_{38}\text{Sr}^{91}$	- 7.62		$6 \text{ } ^{10}\text{Ne}^{20} + \text{}_{38}\text{Sr}^{90*}$	- 5.49
				$6 \text{ } ^{10}\text{Ne}^{18} + \text{}_{38}\text{Sr}^{92*}$	- 9.08
" + ${}_{46}\text{Pd}^{108}$	$6 \text{ } ^{10}\text{Ne}^{24*} + \text{}_{38}\text{Sr}^{88}$	+ 6.76	" + ${}_{46}\text{Pd}^{110}$	$6 \text{ } ^{10}\text{Ne}^{24*} + \text{}_{38}\text{Sr}^{90*}$	+ 5.96
	$6 \text{ } ^{10}\text{Ne}^{22} + \text{}_{38}\text{Sr}^{90*}$	+ 6.85		$6 \text{ } ^{10}\text{Ne}^{22} + \text{}_{38}\text{Sr}^{92*}$	+ 5.03
	$6 \text{ } ^{10}\text{Ne}^{20} + \text{}_{38}\text{Sr}^{92*}$	+ 2.06		$6 \text{ } ^{10}\text{Ne}^{20} + \text{}_{38}\text{Sr}^{94*}$	- 0.133
	$6 \text{ } ^{10}\text{Ne}^{18*} + \text{}_{38}\text{Sr}^{94*}$	- 13.7			
	${}_{38}\text{Sr}^{89*}$ $6 \text{ } \frac{50.52 \text{ D}; \$G 1.49; (909.2)}{6 \text{ } ^{39}\text{Y}^{89}}$				
	${}_{38}\text{Sr}^{90*}$ $6 \text{ } \frac{29.1 \text{ A}; \$G 0.546}{6 \text{ } ^{39}\text{Y}^{90*}}$				
	${}_{39}\text{Y}^{90*}$ $6 \text{ } \frac{2.67 \text{ D}; \$G 2.281; (2186.2)}{6 \text{ } ^{40}\text{Zr}^{90}}$				
	$6 \text{ } \frac{3.19 \text{ H}; \text{II } 479.5; (202.5); \$G (2318.9)}{6 \text{ } ^{40}\text{Zr}^{90}}$				
	${}_{38}\text{Sr}^{91*}$ $6 \text{ } \frac{9.5 \text{ H}; \$G 1.09, 2.70, 1.36; (555.6, 1024.3, 749.7)}{6 \text{ } ^{39}\text{Y}^{91*}}$ $6 \text{ } \frac{49.7 \text{ M}; \text{II } 555.6}{6 \text{ } ^{40}\text{Zr}^{91}}$			$6 \text{ } \frac{58.5 \text{ D}; \$G 1.545; (1205)}{6 \text{ } ^{40}\text{Zr}^{91}}$	
	${}_{38}\text{Sr}^{92*}$ $6 \text{ } \frac{2.71 \text{ H}; \$G 0.54 (1384.0)}{6 \text{ } ^{39}\text{Y}^{92*}}$ $6 \text{ } \frac{3.54 \text{ H}; \$G 3.64; (934.5, 1405.4)}{6 \text{ } ^{40}\text{Zr}^{92}}$				
	${}_{38}\text{Sr}^{94*}$ $6 \text{ } \frac{1.25 \text{ M}; \$G 2.08; (1427.6)}{6 \text{ } ^{39}\text{Y}^{94*}}$ $6 \text{ } \frac{18.7 \text{ M}; \$G 4.92; 918.7, 1138.9, 550.9}{6 \text{ } ^{40}\text{Zr}^{94}}$				
" + ${}_{46}\text{Pd}^{102}$	$6 \text{ } ^{12}\text{Mg}^{22*} + \text{}_{36}\text{Kr}^{84}$	- 2.69	" + ${}_{46}\text{Pd}^{104}$	$6 \text{ } ^{12}\text{Mg}^{22*} + \text{}_{36}\text{Kr}^{86}$	- 3.34
	$6 \text{ } ^{12}\text{Mg}^{24} + \text{}_{36}\text{Kr}^{82}$	+ 9.02		$6 \text{ } ^{12}\text{Mg}^{24} + \text{}_{36}\text{Kr}^{84}$	+ 9.38
	$6 \text{ } ^{12}\text{Mg}^{26} + \text{}_{36}\text{Kr}^{80}$	+ 8.60		$6 \text{ } ^{12}\text{Mg}^{26} + \text{}_{36}\text{Kr}^{82}$	+ 9.82
	$6 \text{ } ^{12}\text{Mg}^{28*} + \text{}_{36}\text{Kr}^{78}$	+ 3.66		$6 \text{ } ^{12}\text{Mg}^{28*} + \text{}_{36}\text{Kr}^{80}$	+ 5.93
" + ${}_{46}\text{Pd}^{105}$	$6 \text{ } ^{12}\text{Mg}^{25} + \text{}_{36}\text{Kr}^{84}$	+ 9.64	" + ${}_{46}\text{Pd}^{106}$	$6 \text{ } ^{12}\text{Mg}^{22*} + \text{}_{36}\text{Kr}^{88*}$	- 7.39
	$6 \text{ } ^{12}\text{Mg}^{22} + \text{}_{36}\text{Kr}^{87*}$	- 4.90		$6 \text{ } ^{12}\text{Mg}^{24} + \text{}_{36}\text{Kr}^{86}$	+ 9.72
				$6 \text{ } ^{12}\text{Mg}^{26} + \text{}_{36}\text{Kr}^{84}$	+ 11.2
				$6 \text{ } ^{12}\text{Mg}^{28*} + \text{}_{36}\text{Kr}^{82}$	+ 8.13

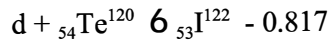
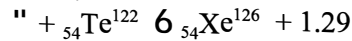
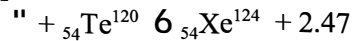
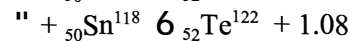
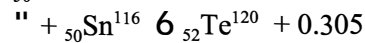
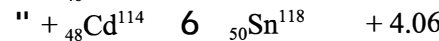
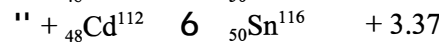
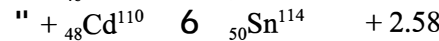
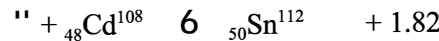
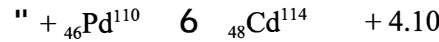
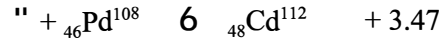
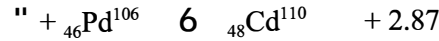
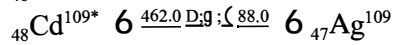
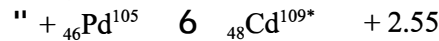
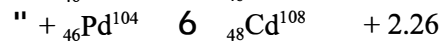
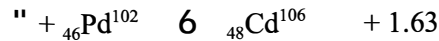
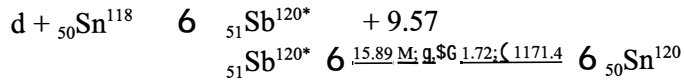
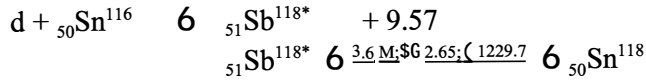
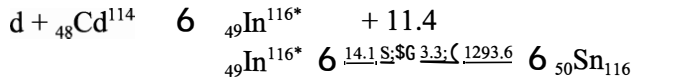
" + ${}_{46}\text{Pd}^{108}$	6	${}_{12}\text{Mg}^{24} + {}_{36}\text{Kr}^{88*}$	+ 6.53	" + ${}_{46}\text{Pd}^{110}$	6	${}_{12}\text{Mg}^{26} + {}_{36}\text{Kr}^{88*}$	+ 6.00
	6	${}_{12}\text{Mg}^{26} + {}_{36}\text{Kr}^{86}$	+ 12.4		6	${}_{12}\text{Mg}^{28} + {}_{36}\text{Kr}^{86*}$	+ 12.4
	6	${}_{12}\text{Mg}^{28} + {}_{36}\text{Kr}^{84}$	- 10.3				
		${}_{36}\text{Kr}^{87*}$	6 <u>1.27; \$G 3.5; 3.9; (402.6)</u>			${}_{37}\text{Rb}^{87}$	6
		${}_{36}\text{Kr}^{88*}$	6 <u>2.84 H; \$G 0.52, 2.9; (2392.1, 196.3)</u>			${}_{37}\text{Rb}^{88*}$	6 <u>17.7 M; \$G 5.31; (1836.1, 898.1)</u>
		${}_{12}\text{Mg}^{22*}$	6 <u>3.86 S; \$G 3.1; (582, 72.9)</u>			${}_{11}\text{Na}^{22*}$	6 <u>2.605 A; \$G 0.546, q; (1274.5)</u>
		${}_{12}\text{Mg}^{28*}$	6 <u>21.0 H; \$G 0.459; (30.6, 1342.3)</u>			${}_{10}\text{Ne}^{22}$	6
						${}_{13}\text{Al}^{28*}$	6 <u>2.25 M; \$-2.86; (1179.0)</u>
						${}_{14}\text{Si}^{28}$	6
" + ${}_{46}\text{Pd}^{102}$	6	${}_{14}\text{Si}^{26*} + {}_{34}\text{Se}^{80}$	- 0.60	" + ${}_{46}\text{Pd}^{104}$	6	${}_{14}\text{Si}^{26*} + {}_{34}\text{Se}^{82}$	- 2.25
	6	${}_{14}\text{Si}^{28} + {}_{34}\text{Se}^{78}$	+ 13.0		6	${}_{14}\text{Si}^{28} + {}_{34}\text{Se}^{80}$	+ 12.2
	6	${}_{14}\text{Si}^{30} + {}_{34}\text{Se}^{76}$	+ 14.2		6	${}_{14}\text{Si}^{30} + {}_{34}\text{Se}^{78}$	+ 15.5
	6	${}_{14}\text{Si}^{32*} + {}_{34}\text{Se}^{74}$	+ 10.8		6	${}_{14}\text{Si}^{32*} + {}_{34}\text{Se}^{76}$	+ 9.32
" + ${}_{46}\text{Pd}^{105}$	6	${}_{14}\text{Si}^{25} + {}_{34}\text{Se}^{84*}$	- 13.9	" + ${}_{46}\text{Pd}^{106}$	6	${}_{14}\text{Si}^{26*} + {}_{34}\text{Se}^{84*}$	- 4.41
	6	${}_{14}\text{Si}^{27} + {}_{34}\text{Se}^{82}$	+ 3.98		6	${}_{14}\text{Si}^{28} + {}_{34}\text{Se}^{82}$	+ 11.6
					6	${}_{14}\text{Si}^{30} + {}_{34}\text{Se}^{80}$	+ 14.7
					6	${}_{14}\text{Si}^{32*} + {}_{34}\text{Se}^{78}$	+ 13.6
" + ${}_{46}\text{Pd}^{108}$	6	${}_{14}\text{Si}^{28} + {}_{34}\text{Se}^{84*}$	+ 10.3	" + ${}_{46}\text{Pd}^{110}$	6	${}_{14}\text{Si}^{30} + {}_{34}\text{Se}^{84*}$	+ 14.3
	6	${}_{14}\text{Si}^{30} + {}_{34}\text{Se}^{82}$	+ 14.9		6	${}_{14}\text{Si}^{32} + {}_{34}\text{Se}^{82}$	+ 15.8
	6	${}_{14}\text{Si}^{32*} + {}_{34}\text{Se}^{80}$	+ 14.7				
		${}_{14}\text{Si}^{26*}$	6 <u>2.23 S; \$G 3.83; (829)</u>			${}_{13}\text{Al}^{26*}$	6 <u>6.345 S; \$G 3.21</u>
		${}_{14}\text{Si}^{32*}$	6 <u>1.0E2 A; \$G 0.221;</u>			${}_{12}\text{Mg}^{26}$	6
		${}_{34}\text{Se}^{84*}$	6 <u>3.3 M H; \$G 1.41; (408.2)</u>			${}_{15}\text{P}^{32*}$	6 <u>14.28 D; \$G 1.709</u>
						${}_{16}\text{S}^{32}$	6
						${}_{35}\text{Br}^{84*}$	6 <u>6.0M; \$G 2.2; (1463, 424, 881.7)</u>
						${}_{36}\text{Kr}^{84}$	6
							6 <u>31.8M; \$G 4.65, 3.8, 2.7; (881.7, 1897.7)</u>
" + ${}_{46}\text{Pd}^{102}$	6	${}_{16}\text{S}^{30*} + {}_{32}\text{Ge}^{76}$	+ 1.77	" + ${}_{46}\text{Pd}^{104}$	6	${}_{16}\text{S}^{30*} + {}_{32}\text{Ge}^{78}$	- 1.14
	6	${}_{16}\text{S}^{32} + {}_{32}\text{Ge}^{74}$	+ 13.9		6	${}_{16}\text{S}^{32} + {}_{32}\text{Ge}^{76}$	+ 12.2
	6	${}_{16}\text{S}^{34} + {}_{32}\text{Ge}^{72}$	+ 17.0		6	${}_{16}\text{S}^{34} + {}_{32}\text{Ge}^{74}$	+ 16.4
	6	${}_{16}\text{S}^{36} + {}_{32}\text{Ge}^{70}$	+ 15.7		6	${}_{16}\text{S}^{36} + {}_{32}\text{Ge}^{72}$	+ 16.3
" + ${}_{46}\text{Pd}^{106}$	6	${}_{16}\text{S}^{32} + {}_{32}\text{Ge}^{78*}$	+ 10.3	" + ${}_{46}\text{Pd}^{108}$	6	${}_{16}\text{S}^{34} + {}_{32}\text{Ge}^{78*}$	+ 14.6
	6	${}_{16}\text{S}^{34} + {}_{32}\text{Ge}^{76}$	+ 15.7		6	${}_{16}\text{S}^{36} + {}_{32}\text{Ge}^{76}$	+ 16.8
	6	${}_{16}\text{S}^{36} + {}_{32}\text{Ge}^{74}$	+ 16.6		6	${}_{16}\text{S}^{38} + {}_{32}\text{Ge}^{74}$	+ 13.2
" + ${}_{46}\text{Pd}^{110}$	6	${}_{16}\text{S}^{36} + {}_{32}\text{Ge}^{78*}$	+ 16.5				
		${}_{16}\text{S}^{30*}$	6 <u>1.18 S; \$G 4.42, 5.09; (667.2)</u>			${}_{15}\text{P}^{30*}$	6 <u>2.50M; \$G 3.24; q; (2235.2)</u>
		${}_{32}\text{Ge}^{78*}$	6 <u>1.45 H; \$G 0.70; (277)</u>			${}_{14}\text{Si}^{30}$	6
						${}_{33}\text{As}^{78*}$	6 <u>1.512 H; \$G 4.3, 3.7, 1.7, 3.0; (613.7, 694.9, 1308.7)</u>
						${}_{34}\text{Se}^{78}$	6
" + ${}_{46}\text{Pd}^{102}$	6	${}_{18}\text{Ar}^{34*} + {}_{30}\text{Zn}^{72*}$	+ 1.02	" + ${}_{46}\text{Pd}^{104}$	6	${}_{18}\text{Ar}^{36} + {}_{30}\text{Zn}^{72*}$	+ 11.4
	6	${}_{18}\text{Ar}^{36} + {}_{30}\text{Zn}^{70}$	+ 14.3		6	${}_{18}\text{Ar}^{38} + {}_{30}\text{Zn}^{70}$	+ 17.3
	6	${}_{18}\text{Ar}^{38} + {}_{30}\text{Zn}^{68}$	+ 19.2		6	${}_{18}\text{Ar}^{40} + {}_{30}\text{Zn}^{68}$	+ 18.1
	6	${}_{18}\text{Ar}^{40} + {}_{30}\text{Zn}^{66}$	+ 18.4		6	${}_{18}\text{Ar}^{42} + {}_{30}\text{Zn}^{66}$	+ 16.3
	6	${}_{18}\text{Ar}^{42*} + {}_{30}\text{Zn}^{64}$	+ 14.9				
" + ${}_{46}\text{Pd}^{106}$	6	${}_{18}\text{Ar}^{38} + {}_{30}\text{Zn}^{72*}$	+ 15.4	" + ${}_{46}\text{Pd}^{108}$	6	${}_{18}\text{Ar}^{40} + {}_{30}\text{Zn}^{72*}$	+ 16.1
	6	${}_{18}\text{Ar}^{40} + {}_{30}\text{Zn}^{70}$	+ 17.1		6	${}_{18}\text{Ar}^{42*} + {}_{30}\text{Zn}^{70}$	+ 16.9

" + ${}_{46}\text{Pd}^{110}$	${}_{18}\text{Ar}^{42*} + {}_{30}\text{Zn}^{68} + 16.9$			
	${}_{18}\text{Ar}^{42*} + {}_{30}\text{Zn}^{72*} + 16.6$			
	${}_{18}\text{Ar}^{34*} \underline{6.844 \text{ MS; } \$G 5.037, 666.5, 461, 2580} \underline{6.17 \text{ Cl}^{34*}} \underline{6}$			
	$\underline{17 \text{ Cl}^{34*}} \underline{6.32.2 \text{ M; } \$G 2.5, 1.3; (2127.7, 1176, 3303.6)} \underline{6.16 \text{ S}^{34}}$			
	$\underline{6.1.528 \text{ S; } \$G 4.47} \underline{6.16 \text{ S}^{34}}$			
	${}_{18}\text{Ar}^{42*} \underline{6.33 \text{ A; } \$G} \underline{6.19 \text{ K}^{42*}} \underline{6.12.36 \text{ H; } \$G 3.52; (1524.6)} \underline{6.20 \text{ Ca}^{42}}$			
${}_{30}\text{Zn}^{72*} \underline{6.46.5 \text{ H; } \$G 0.30; (144.7)} \underline{6.31 \text{ Ga}^{72*}} \underline{6.14.10 \text{ H; } \$G 0.96, 0.64; (834.1, 2201.7, 630)} \underline{6.32 \text{ Ge}^{72}}$				
" + ${}_{46}\text{Pd}^{105}$	${}_{19}\text{K}^{41} + {}_{29}\text{Cu}^{68*} + 15.0$			
	${}_{19}\text{K}^{43*} + {}_{29}\text{Cu}^{66*} + 16.9$			
	${}_{19}\text{K}^{45*} + {}_{29}\text{Cu}^{64*} + 16.1$			
	${}_{29}\text{Cu}^{64*} \underline{6.12.70 \text{ H; } g; \$G 0.578; (1345.8)} \underline{6.30 \text{ Zn}^{64}}$			
	$\underline{6.12.70 \text{ H; } \$G 0.651} \underline{6.28 \text{ Ni}^{64}}$			
	${}_{29}\text{Cu}^{66*} \underline{6.5.10 \text{ M; } \$G 2.63; (1039.3)} \underline{6.30 \text{ Zn}^{66}}$			
${}_{29}\text{Cu}^{68*} \underline{6.31 \text{ S; } \$G 3.5, 4.6; (1077.3, 1261.2)} \underline{6.30 \text{ Zn}^{68}}$				
${}_{19}\text{K}^{45*} \underline{6.22.3 \text{ H; } \$G 0.83; (372.8, 617.5)} \underline{6.20 \text{ Ca}^{43}}$				
${}_{19}\text{K}^{45*} \underline{6.17.8 \text{ M; } \$G 2.1; (174.2, 1705.6)} \underline{6.20 \text{ Ca}^{45}} \underline{6.162.7 \text{ D; } \$G 0.258; (12.4)} \underline{6.21 \text{ Sc}^{45}}$				
" + ${}_{46}\text{Pd}^{102}$	${}_{20}\text{Ca}^{48} + {}_{28}\text{Ni}^{58} + 7.97$			
	${}_{20}\text{Ca}^{46} + {}_{28}\text{Ni}^{60} + 19.0$			
	${}_{20}\text{Ca}^{44} + {}_{28}\text{Ni}^{62} + 22.1$			
	${}_{20}\text{Ca}^{42} + {}_{28}\text{Ni}^{64} + 22.7$			
	${}_{20}\text{Ca}^{40} + {}_{28}\text{Ni}^{66*} + 20.1$			
	${}_{20}\text{Ca}^{50*} + {}_{28}\text{Ni}^{60} + 16.6$			
" + ${}_{46}\text{Pd}^{106}$	${}_{20}\text{Ca}^{48} + {}_{28}\text{Ni}^{62} + 23.5$			
	${}_{20}\text{Ca}^{46} + {}_{28}\text{Ni}^{64} + 22.8$			
	${}_{20}\text{Ca}^{44} + {}_{28}\text{Ni}^{66*} + 20.0$			
	${}_{28}\text{Ni}^{66*} \underline{6.54.6 \text{ H; } \$G 0.20} \underline{6.29 \text{ Cu}^{66*}} \underline{6.5.10 \text{ M; } \$G 2.63; (1039.3)} \underline{6.30 \text{ Zn}^{66}}$			
	${}_{20}\text{Ca}^{50*} \underline{6.14 \text{ S; } \$G 3.12; (256.9, 1519.3, 71.6, 1590.8)} \underline{6.21 \text{ Sc}^{50*}}$			
	${}_{21}\text{Sc}^{50*} \underline{6.1.71 \text{ M; } \$G 3.69; (1553.8, 1121, 523.8)} \underline{6.22 \text{ Ti}^{50}}$			
" + ${}_{46}\text{Pd}^{102}$	${}_{22}\text{Ti}^{46} + {}_{26}\text{Fe}^{60*} + 20.1$			
	${}_{22}\text{Ti}^{48} + {}_{26}\text{Fe}^{58} + 25.1$			
	${}_{22}\text{Ti}^{50} + {}_{26}\text{Fe}^{56} + 26.5$			
	${}_{22}\text{Ti}^{52*} + {}_{26}\text{Fe}^{54} + 20.2$			
	${}_{22}\text{Ti}^{50} + {}_{26}\text{Fe}^{60*} + 25.4$			
	${}_{22}\text{Ti}^{52*} + {}_{26}\text{Fe}^{58} + 24.1$			
" + ${}_{46}\text{Pd}^{106}$	${}_{22}\text{Ti}^{52*} \underline{6.1.7 \text{ M; } \$G 1.8; (124.5, 17.0)} \underline{6.23 \text{ V}^{52*}} \underline{6.3.76 \text{ M; } \$G 2.47; (1434.1)} \underline{6.24 \text{ Cr}^{52}}$			
	${}_{26}\text{Fe}^{60*} \underline{6.1.5E6 \text{ A; } \$G 0.147; (58.6)} \underline{6.27 \text{ Co}^{60*}} \underline{6.10.47 \text{ M; } \text{IT } 58.69 \text{ eG; } \$G 1.6; (1322.5)} \underline{6.28 \text{ Ni}^{60}}$			
	$\underline{6.5.271 \text{ A; } \$G 0.318; (1322.5, 1173.2)} \underline{6.28 \text{ Ni}^{60}}$			
" + ${}_{46}\text{Pd}^{105}$	${}_{11}\text{Na}^{23} + {}_{36}\text{Kr}^{84} + d - 7.16$			
	${}_{11}\text{Na}^{21*} + {}_{36}\text{Kr}^{86} + d - 13.7$			
	${}_{11}\text{Na}^{21*} \underline{6.22.48 \text{ S; } \$G 2.51; (350.7)} \underline{6.10 \text{ Ne}^{21}}$			

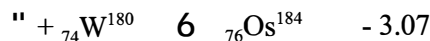
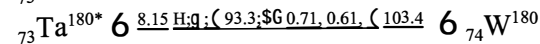
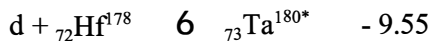
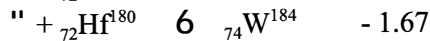
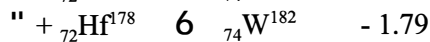
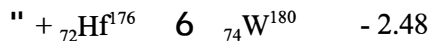
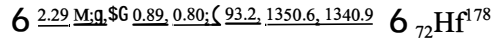
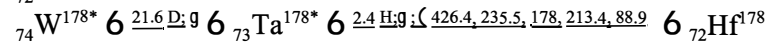
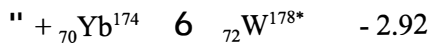
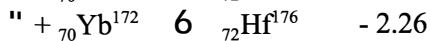
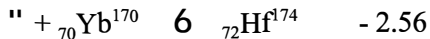


5. a + Pd 6 C (a = d or '')





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" + ${}_{74}\text{W}^{182}$	6	${}_{76}\text{Os}^{186}$	- 2.83
" + ${}_{76}\text{Os}^{184}$	6	${}_{78}\text{Pt}^{188*}$	- 3.07
		${}_{78}\text{Pt}^{188*}$ 6 <u>10.2 D; g; (187.5, 195.0</u>	6 ${}_{77}\text{Ir}^{188*}$
		${}_{77}\text{Ir}^{188*}$ 6 <u>1.72 D; g, \$G 1.65, 1.13; (155.1, 2214.7, 663.1, 478.0</u>	6 ${}_{76}\text{Os}^{188}$
" + ${}_{76}\text{Os}^{186}$	6	${}_{78}\text{Pt}^{190}$	- 3.24
" + ${}_{76}\text{Os}^{188}$	6	${}_{78}\text{Pt}^{192}$	- 2.42
" + ${}_{78}\text{Pt}^{190}$	6	${}_{80}\text{Hg}^{194*}$	- 2.69
		${}_{80}\text{Hg}^{194*}$ 6 <u>520 A; g</u>	6 ${}_{79}\text{Au}^{194*}$ 6 <u>1.64 D; g, \$G 1.49; (328.5, 293.6</u>
" + ${}_{78}\text{Pt}^{192}$	6	${}_{80}\text{Hg}^{196}$	- 1.99
" + ${}_{78}\text{Pt}^{194}$	6	${}_{80}\text{Hg}^{198}$	- 1.33
" + ${}_{80}\text{Hg}^{196}$	6	${}_{82}\text{Pb}^{200*}$	- 3.06
		${}_{82}\text{Pb}^{200*}$ 6 <u>21.5 H; g; (147.6</u>	6 ${}_{81}\text{Ti}^{200*}$ 6 <u>1.087 D; g, \$G 1.07; 1.44; (368.0, 1205.7</u>
" + ${}_{80}\text{Hg}^{198}$	6	${}_{82}\text{Pb}^{202*}$	- 2.49
		${}_{82}\text{Pb}^{202*}$ 6 <u>5.3 E4 A; g</u>	6 ${}_{81}\text{Ti}^{202*}$ 6 <u>12.23 D; g, \$G (439.6</u>
			6 ${}_{80}\text{Hg}^{202}$

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C. SUMMARY

Without addressing the issues of how deuterons, protons, neutrons, or alpha particles can overcome the Coulomb barrier [3], a list of some of the **nuclear reactions permitted by energy, baryon number, charge, spin, parity, and isospin conservation rules has been presented.** This list should help the experimenter examine some of the possible nuclear reactions that could explain the results observed in recent experiments [1,2]. This work has been accomplished assuming that the conservation rules **will be observed in all low-energy nuclear reactions.** Any replicated experimental evidence to the contrary will assure that the current atomic model should be revised.

The authors would appreciate any corrections and/or additions to the above list.

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