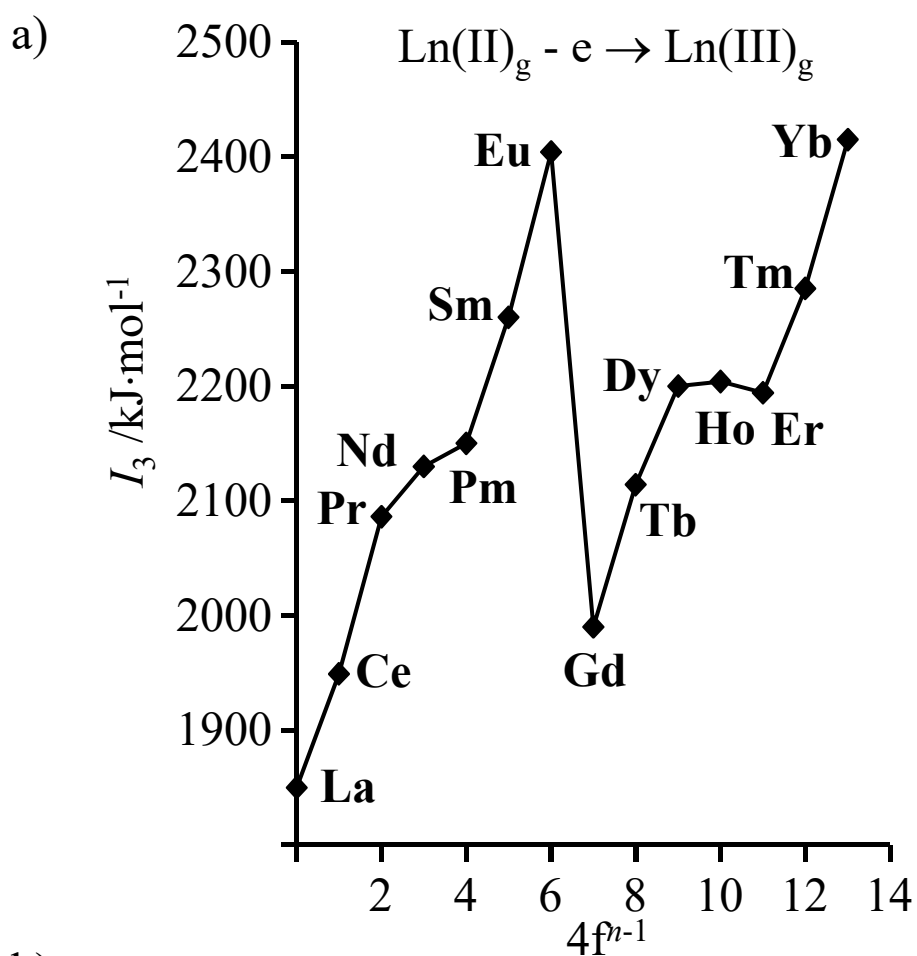


Figure 2



b)

Ln^{2+}	$4f^n$	m	δm	Ln^{3+}	$4f^n$	m	δm
La	$4f^1$	0	0	Gd	$4f^8$	21	0
Ce	$4f^2$	1	1	Tb	$4f^9$	22	1
Pr	$4f^3$	3	2	Dy	$4f^{10}$	24	2
Nd	$4f^4$	6	3	Ho	$4f^{11}$	27	3
Pm	$4f^5$	10	4	Er	$4f^{12}$	31	4
Sm	$4f^6$	15	5	Tm	$4f^{13}$	36	5
Eu	$4f^7$	21	6	Yb	$4f^{14}$	42	6

Figure 3

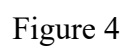


Figure 4

1 IA																18 VIIIA										2							
1 H 1766																										2 He 1868							
2 IIA																																	
3 Li 1817 4 Be 1798																										13 IIIA 14 IVA 15 VA 16 VIA 17 VIIA							
11 Na 1807 12 Mg 1755																										5 B 1808 6 C -3700 7 N 1772 8 O 1771 9 F 1810 10 Ne 1898							
3 IIB 4 IVB 5 VB 6 VIB 7 VIIB 8 VIIIIB 9 10																										13 Al 1825 14 Si 1824 15 P 1669 16 S -2000 17 Cl 1774 18 Ar 1894							
19 K 1807 20 Ca 1808 21 Sc 1878 22 Ti 1791 23 V 1801 24 Cr -1 25 Mn 1774 26 Fe -5000 27 Co 1732 28 Ni 1751 29 Cu -9000 30 Zn -1000																										31 Ga 1875 32 Ge 1886 33 As -2500 34 Se 1817 35 Br 1825 36 Kr 1898							
37 Rb 1861 38 Sr 1784 39 Y 1794 40 Zr 1789 41 Nb 1801 42 Mo 1778 43 Tc 1937 44 Ru 1844 45 Rh 1804 46 Pd 1803 47 Ag -4000 48 Cd 1817																										49 In 1863 50 Sn -3500 51 Sb -3000 52 Te 1782 53 I 1811 54 Xe 1898							
55 Cs 1860 56 Ba 1772 57-71 La-Lu 72 Hf 1911 73 Ta 1802 74 W 1781 75 Re 1908 76 Os 1803 77 Ir 1803 78 Pt 1735 79 Au -6000 80 Hg -2000																										81 Tl 1861 82 Pb -7000 83 Bi 1753 84 Po 1898 85 At 1940 86 Rn 1890							
87 Fr 1939 88 Ra 1898 89-103 Ac-Lr 104 Rf 1968 105 Db 1970 106 Sg 1974 107 Bh 1981 108 Hs 1984 109 Mt 1982 110 Ds 1994 111 Rg 2003 112 Cn 1996 113 Uut 2003 114 Fl 1999 115 Uup 2003 116 Lv 2000 117 Uus 2010 118 Uuo 2006																																	
Copyright © 2012 Eni Generali																																	
57 La 1838 58 Ce 1803 59 Pr 1885 60 Nd 1885 61 Pm 1947 62 Sm 1879 63 Eu 1901 64 Gd 1880 65 Tb 1842 66 Dy 1886 67 Ho 1879 68 Er 1842 69 Tm 1879 70 Yb 1878 71 Lu 1907																																	
89 Ac 1899 90 Th 1829 91 Pa 1913 92 U 1789 93 Np 1940 94 Pu 1941 95 Am 1944 96 Cm 1944 97 Bk 1949 98 Cf 1950 99 Es 1952 100 Fm 1952 101 Md 1955 102 No 1958 103 Lr 1961																																	

Figure 5

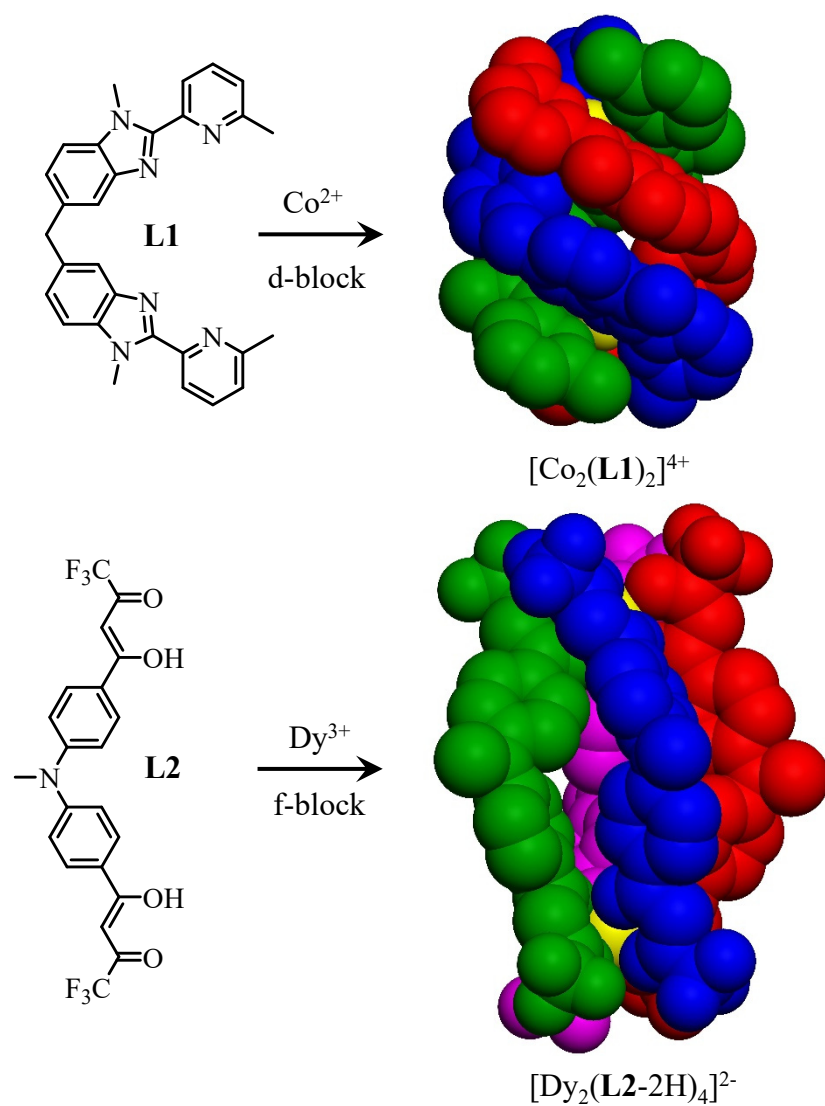


Figure 6

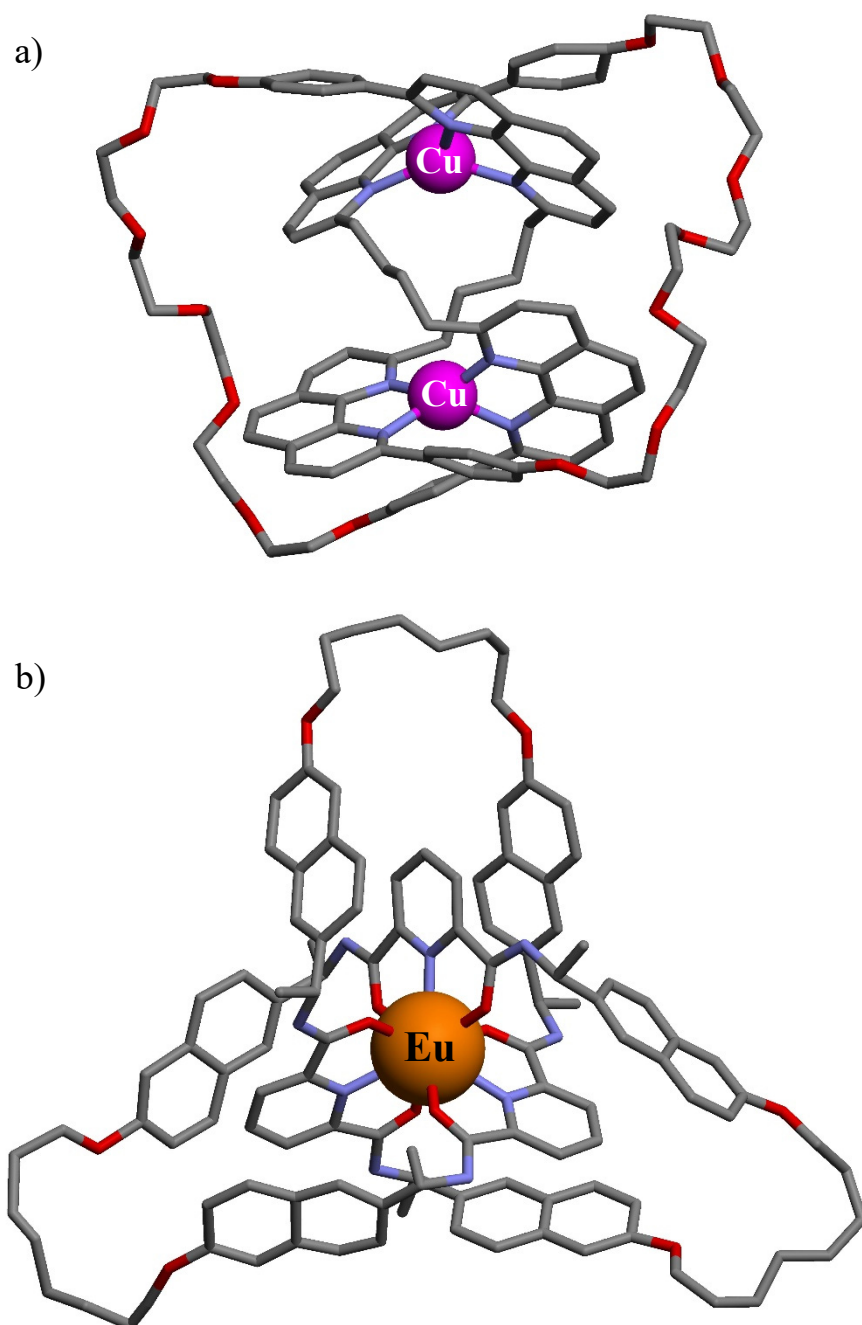


Figure 7

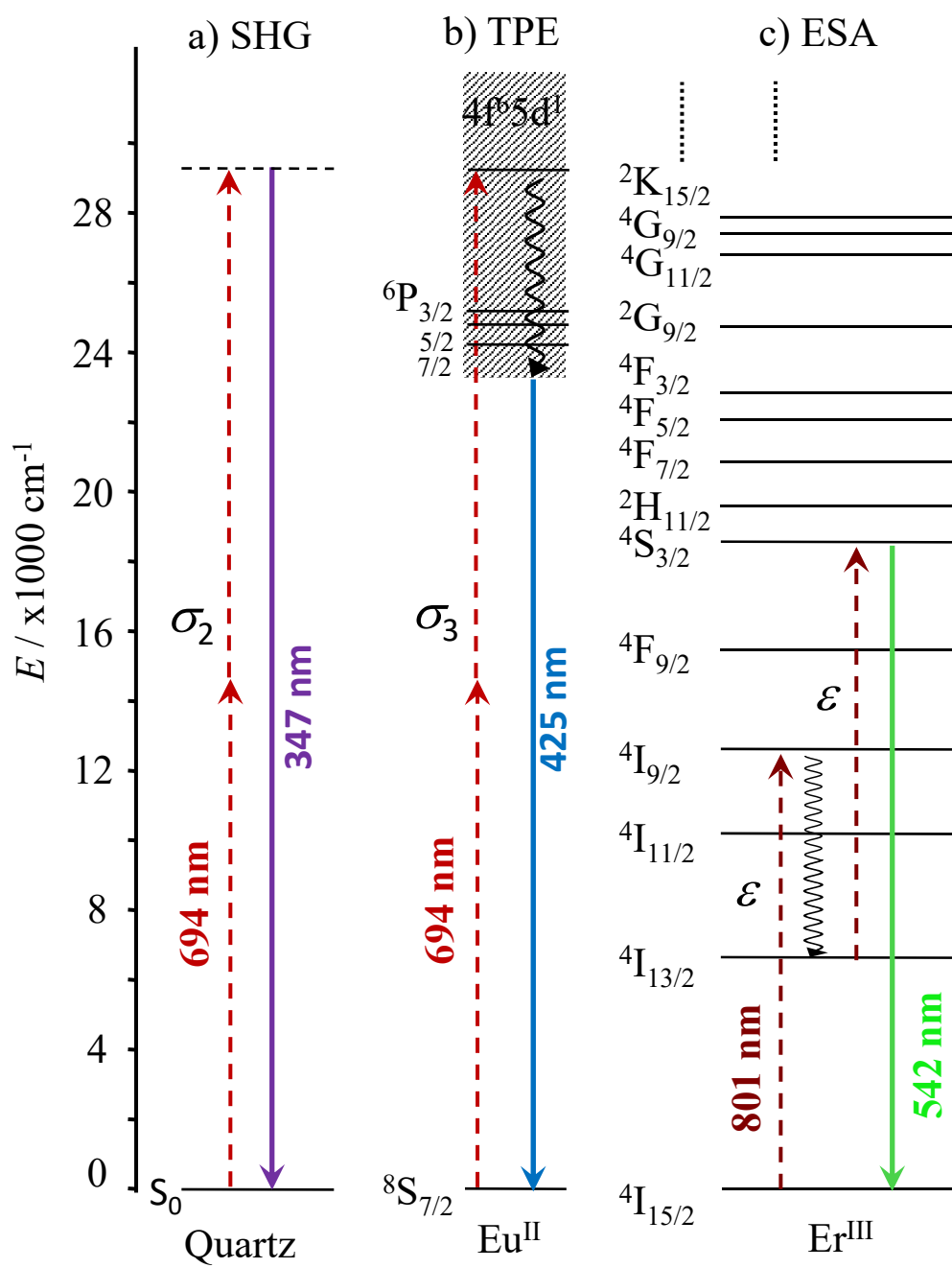


Figure 8

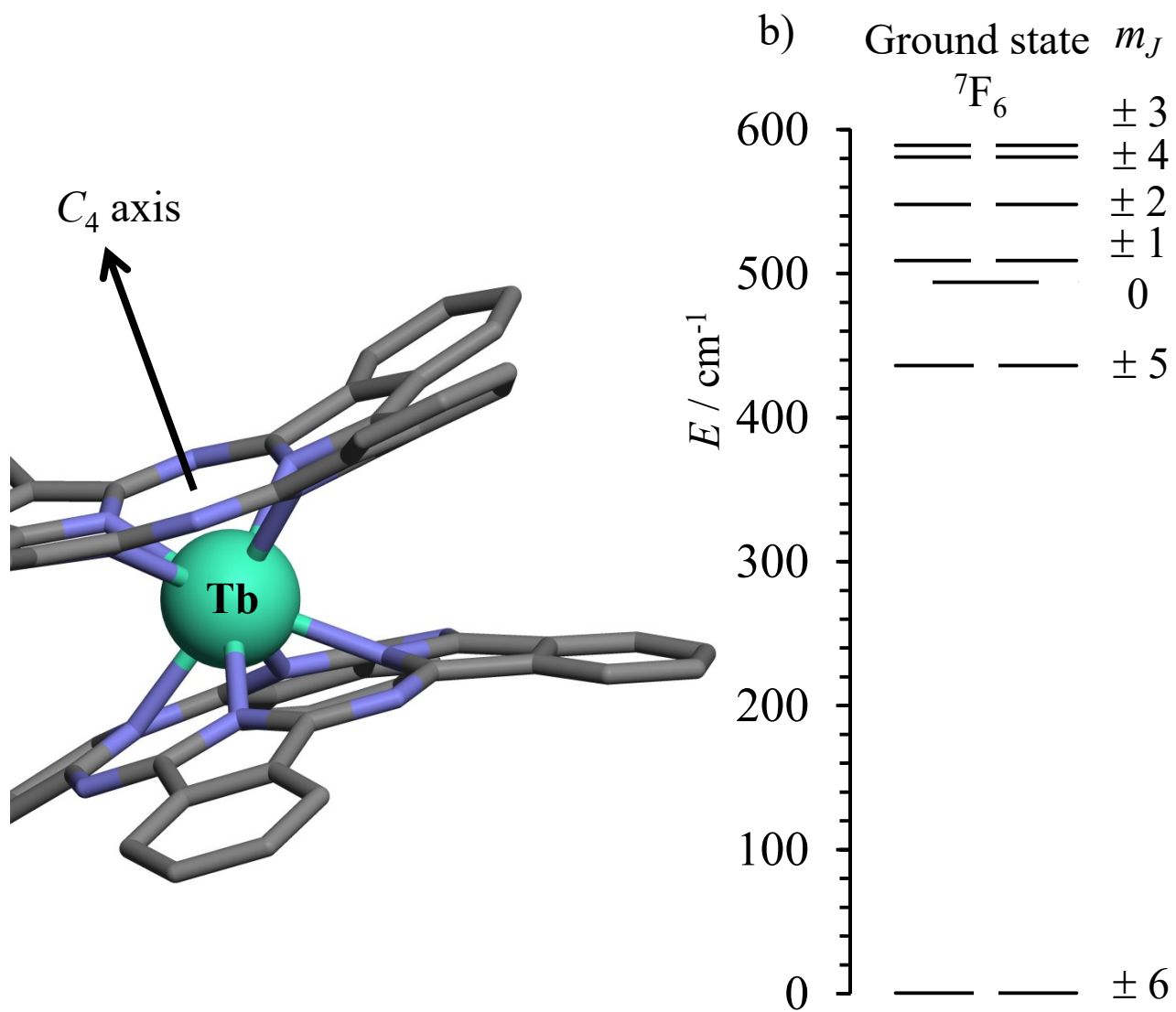
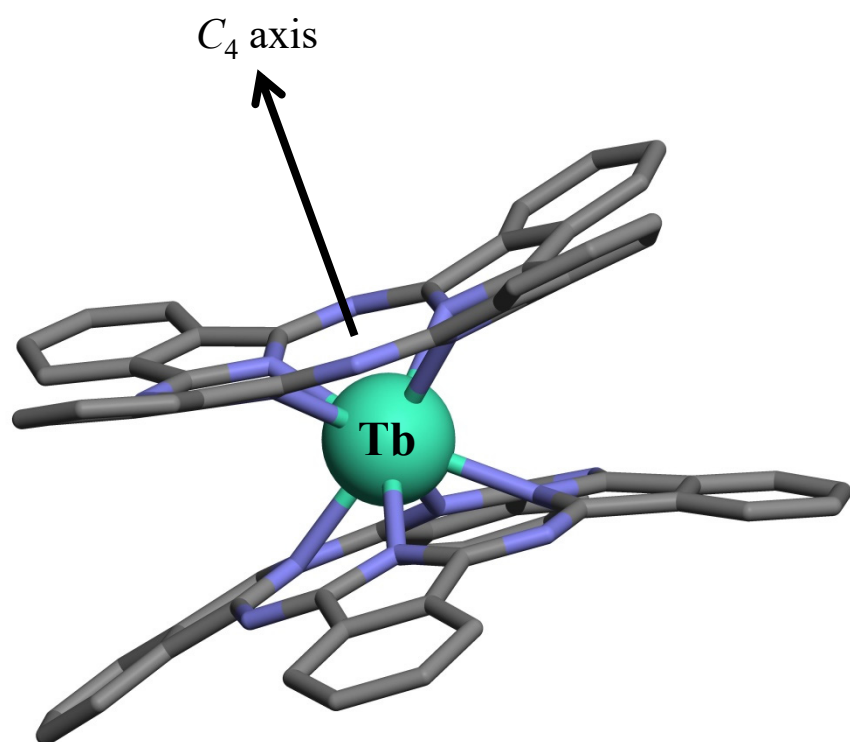


Figure 9

a)



b)

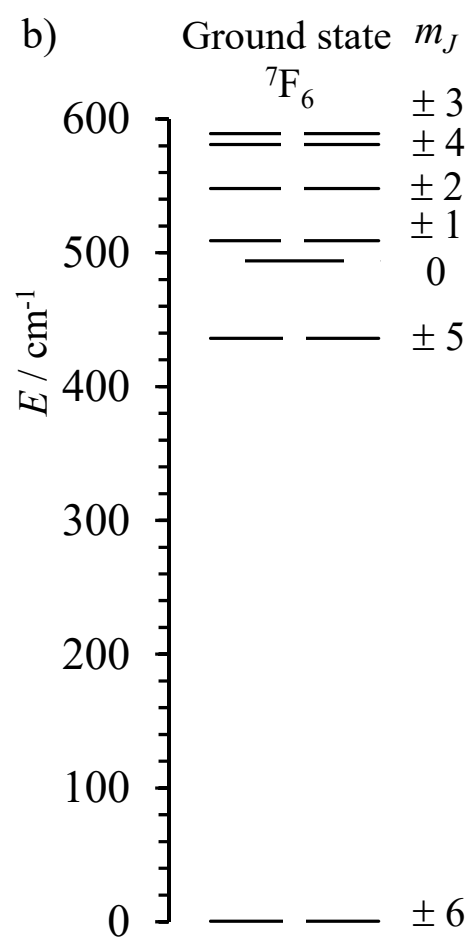


Figure 9

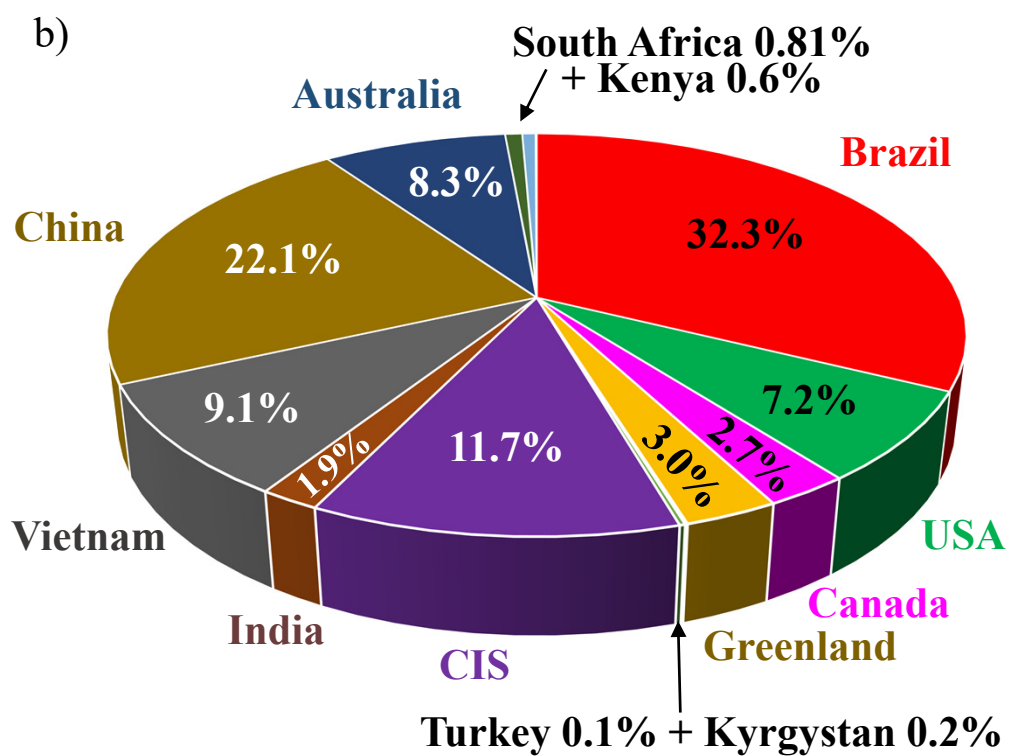
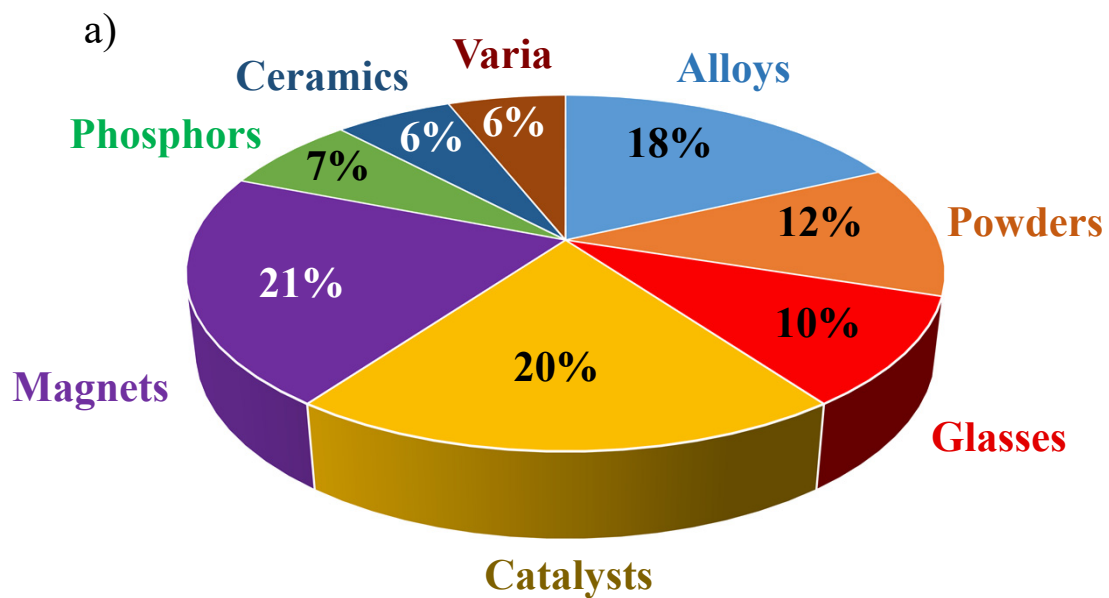


Figure 10

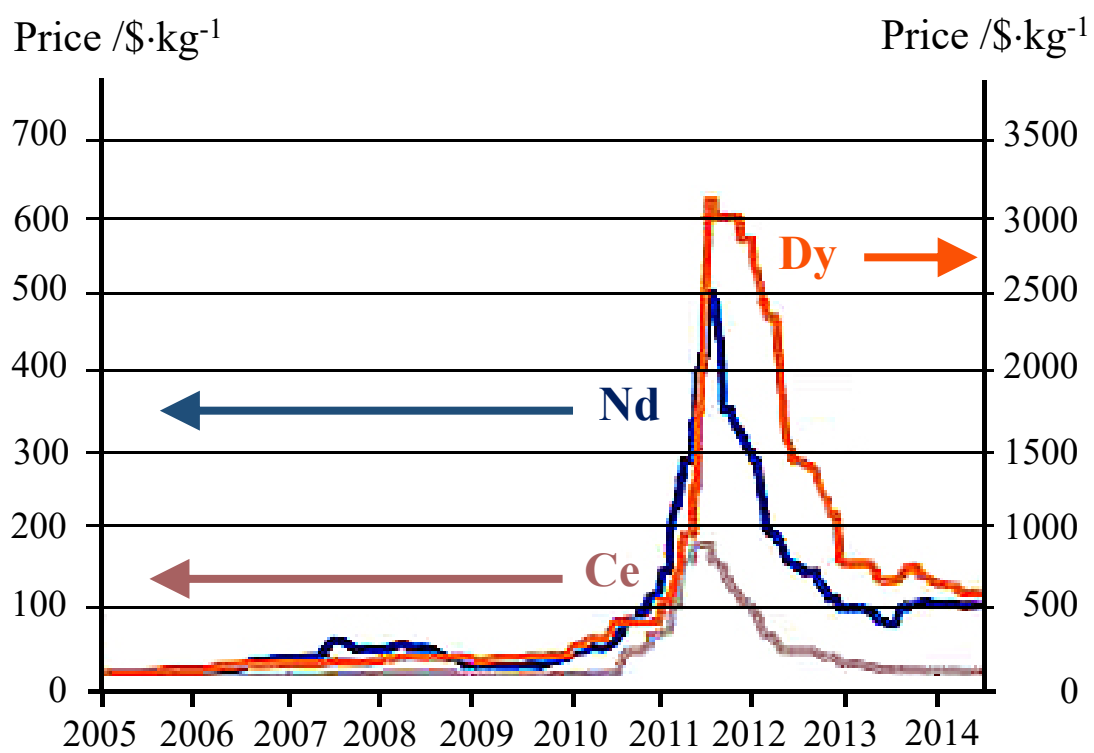


Figure 11