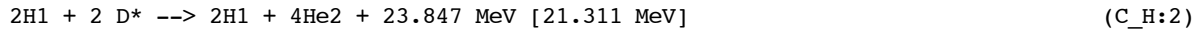
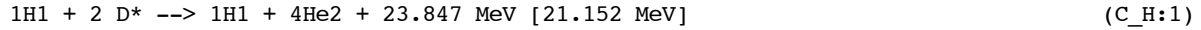
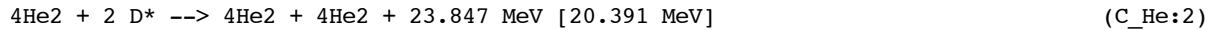
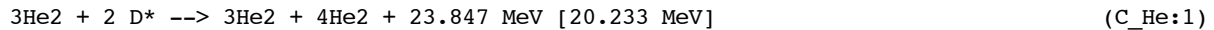


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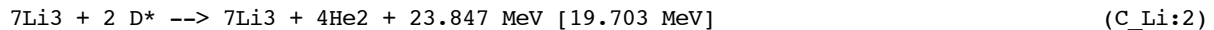
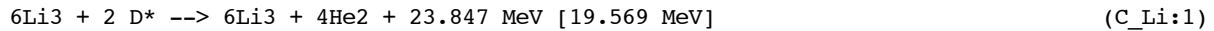
----- Equations follow for Deuterium, H, element 1 -----



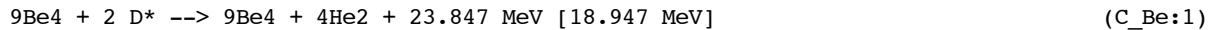
----- Equations follow for Helium, He, element 2 -----



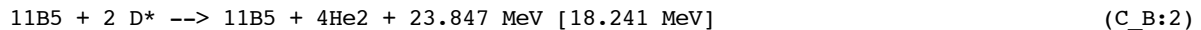
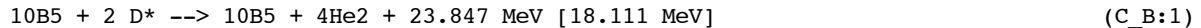
----- Equations follow for Lithium, Li, element 3 -----



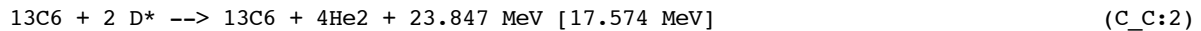
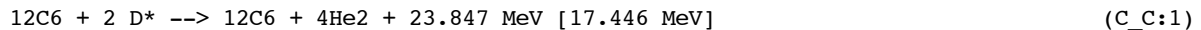
----- Equations follow for Beryllium, Be, element 4 -----



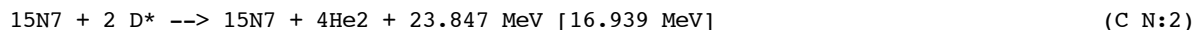
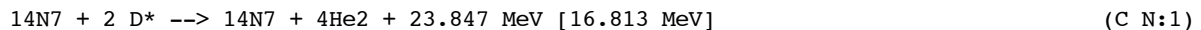
----- Equations follow for Boron, B, element 5 -----



----- Equations follow for Carbon, C, element 6 -----

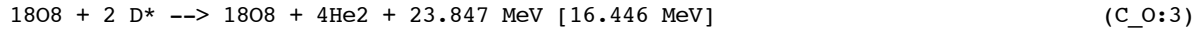
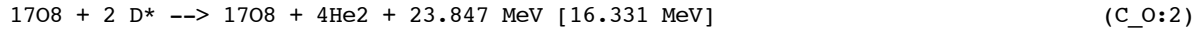
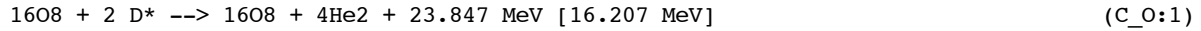


----- Equations follow for Nitrogen, N, element 7 -----

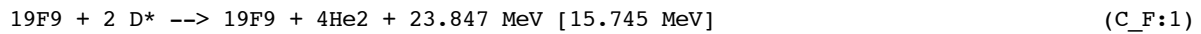


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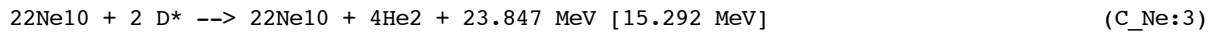
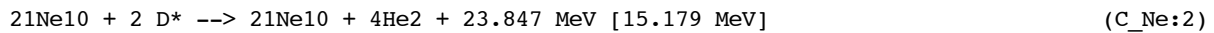
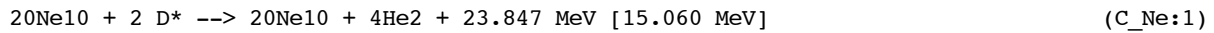
----- Equations follow for Oxygen, O, element 8 -----



----- Equations follow for Fluorine, F, element 9 -----



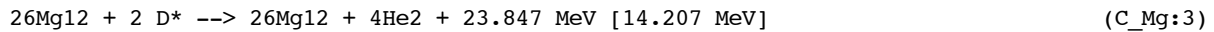
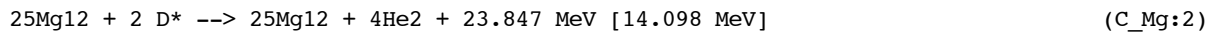
----- Equations follow for Neon, Ne, element 10 -----



----- Equations follow for Sodium, Na, element 11 -----



----- Equations follow for Magnesium, Mg, element 12 -----



----- Equations follow for Aluminum, Al, element 13 -----



----- Equations follow for Silicon, Si, element 14 -----



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29Si14 + 2 D\* --> 29Si14 + 4He2 + 23.847 MeV [13.072 MeV] (C\_Si:2)

30Si14 + 2 D\* --> 30Si14 + 4He2 + 23.847 MeV [13.179 MeV] (C\_Si:3)

----- Equations follow for Phosphorus, P, element 15 -----

31P15 + 2 D\* --> 31P15 + 4He2 + 23.847 MeV [12.577 MeV] (C\_P:1)

----- Equations follow for Sulphur, S, element 16 -----

32S16 + 2 D\* --> 32S16 + 4He2 + 23.847 MeV [11.984 MeV] (C\_S:1)

33S16 + 2 D\* --> 33S16 + 4He2 + 23.847 MeV [12.092 MeV] (C\_S:2)

34S16 + 2 D\* --> 34S16 + 4He2 + 23.847 MeV [12.196 MeV] (C\_S:3)

36S16 + 2 D\* --> 36S16 + 4He2 + 23.847 MeV [12.394 MeV] (C\_S:4)

----- Equations follow for Chlorine, Cl, element 17 -----

35Cl17 + 2 D\* --> 35Cl17 + 4He2 + 23.847 MeV [11.617 MeV] (C\_Cl:1)

37Cl17 + 2 D\* --> 37Cl17 + 4He2 + 23.847 MeV [11.819 MeV] (C\_Cl:2)

----- Equations follow for Argon, Ar, element 18 -----

36Ar18 + 2 D\* --> 36Ar18 + 4He2 + 23.847 MeV [11.046 MeV] (C\_Ar:1)

38Ar18 + 2 D\* --> 38Ar18 + 4He2 + 23.847 MeV [11.253 MeV] (C\_Ar:2)

40Ar18 + 2 D\* --> 40Ar18 + 4He2 + 23.847 MeV [11.447 MeV] (C\_Ar:3)

----- Equations follow for Potassium, K, element 19 -----

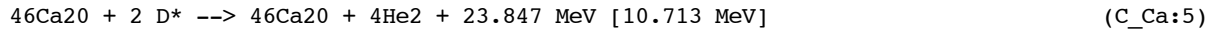
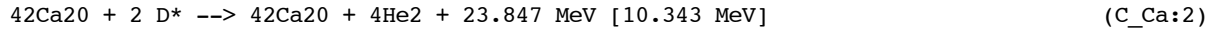
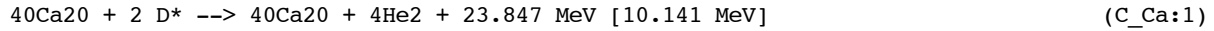
39K19 + 2 D\* --> 39K19 + 4He2 + 23.847 MeV [10.694 MeV] (C\_K:1)

40K19 + 2 D\* --> 40K19 + 4He2 + 23.847 MeV [10.794 MeV] (C\_K:2)

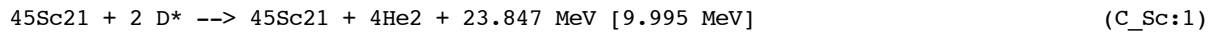
41K19 + 2 D\* --> 41K19 + 4He2 + 23.847 MeV [10.891 MeV] (C\_K:3)

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----- Equations follow for Calcium, Ca, element 20 -----



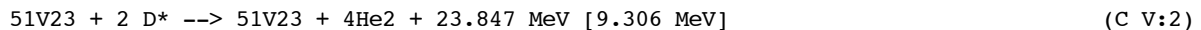
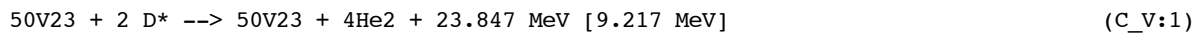
----- Equations follow for Scandium, Sc, element 21 -----



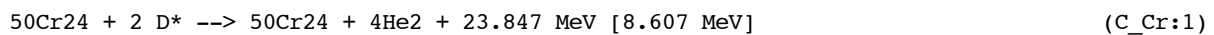
----- Equations follow for Titanium, Ti, element 22 -----



----- Equations follow for Vanadium, V, element 23 -----



----- Equations follow for Chromium, Cr, element 24 -----



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52Cr24 + 2 D\* --> 52Cr24 + 4He2 + 23.847 MeV [8.791 MeV] (C\_Cr:2)

53Cr24 + 2 D\* --> 53Cr24 + 4He2 + 23.847 MeV [8.880 MeV] (C\_Cr:3)

54Cr24 + 2 D\* --> 54Cr24 + 4He2 + 23.847 MeV [8.966 MeV] (C\_Cr:4)

----- Equations follow for Manganese, Mn, element 25 -----

55Mn25 + 2 D\* --> 55Mn25 + 4He2 + 23.847 MeV [8.459 MeV] (C\_Mn:1)

----- Equations follow for Iron, Fe, element 26 -----

54Fe26 + 2 D\* --> 54Fe26 + 4He2 + 23.847 MeV [7.776 MeV] (C\_Fe:1)

56Fe26 + 2 D\* --> 56Fe26 + 4He2 + 23.847 MeV [7.956 MeV] (C\_Fe:2)

57Fe26 + 2 D\* --> 57Fe26 + 4He2 + 23.847 MeV [8.044 MeV] (C\_Fe:3)

58Fe26 + 2 D\* --> 58Fe26 + 4He2 + 23.847 MeV [8.129 MeV] (C\_Fe:4)

----- Equations follow for Cobalt, Co, element 27 -----

59Co27 + 2 D\* --> 59Co27 + 4He2 + 23.847 MeV [7.634 MeV] (C\_Co:1)

----- Equations follow for Nickel, Ni, element 28 -----

58Ni28 + 2 D\* --> 58Ni28 + 4He2 + 23.847 MeV [6.965 MeV] (C\_Ni:1)

60Ni28 + 2 D\* --> 60Ni28 + 4He2 + 23.847 MeV [7.143 MeV] (C\_Ni:2)

61Ni28 + 2 D\* --> 61Ni28 + 4He2 + 23.847 MeV [7.229 MeV] (C\_Ni:3)

62Ni28 + 2 D\* --> 62Ni28 + 4He2 + 23.847 MeV [7.313 MeV] (C\_Ni:4)

64Ni28 + 2 D\* --> 64Ni28 + 4He2 + 23.847 MeV [7.477 MeV] (C\_Ni:5)

----- Equations follow for Copper, Cu, element 29 -----

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63Cu29 + 2 D\* --> 63Cu29 + 4He2 + 23.847 MeV [6.828 MeV] (C\_Cu:1)

65Cu29 + 2 D\* --> 65Cu29 + 4He2 + 23.847 MeV [6.994 MeV] (C\_Cu:2)

----- Equations follow for Zinc, Zn, element 30 -----

64Zn30 + 2 D\* --> 64Zn30 + 4He2 + 23.847 MeV [6.348 MeV] (C\_Zn:1)

66Zn30 + 2 D\* --> 66Zn30 + 4He2 + 23.847 MeV [6.516 MeV] (C\_Zn:2)

67Zn30 + 2 D\* --> 67Zn30 + 4He2 + 23.847 MeV [6.598 MeV] (C\_Zn:3)

68Zn30 + 2 D\* --> 68Zn30 + 4He2 + 23.847 MeV [6.678 MeV] (C\_Zn:4)

70Zn30 + 2 D\* --> 70Zn30 + 4He2 + 23.847 MeV [6.834 MeV] (C\_Zn:5)

----- Equations follow for Gallium, Ga, element 31 -----

69Ga31 + 2 D\* --> 69Ga31 + 4He2 + 23.847 MeV [6.205 MeV] (C\_Ga:1)

71Ga31 + 2 D\* --> 71Ga31 + 4He2 + 23.847 MeV [6.364 MeV] (C\_Ga:2)

----- Equations follow for Germanium, Ge, element 32 -----

70Ge32 + 2 D\* --> 70Ge32 + 4He2 + 23.847 MeV [5.736 MeV] (C\_Ge:1)

72Ge32 + 2 D\* --> 72Ge32 + 4He2 + 23.847 MeV [5.897 MeV] (C\_Ge:2)

73Ge32 + 2 D\* --> 73Ge32 + 4He2 + 23.847 MeV [5.975 MeV] (C\_Ge:3)

74Ge32 + 2 D\* --> 74Ge32 + 4He2 + 23.847 MeV [6.052 MeV] (C\_Ge:4)

76Ge32 + 2 D\* --> 76Ge32 + 4He2 + 23.847 MeV [6.201 MeV] (C\_Ge:5)

----- Equations follow for Arsenic, As, element 33 -----

75As33 + 2 D\* --> 75As33 + 4He2 + 23.847 MeV [5.590 MeV] (C\_As:1)

----- Equations follow for Selenium, Se, element 34 -----

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74Se34 + 2 D\* --> 74Se34 + 4He2 + 23.847 MeV [4.973 MeV] (C\_Se:1)

76Se34 + 2 D\* --> 76Se34 + 4He2 + 23.847 MeV [5.132 MeV] (C\_Se:2)

77Se34 + 2 D\* --> 77Se34 + 4He2 + 23.847 MeV [5.209 MeV] (C\_Se:3)

78Se34 + 2 D\* --> 78Se34 + 4He2 + 23.847 MeV [5.285 MeV] (C\_Se:4)

80Se34 + 2 D\* --> 80Se34 + 4He2 + 23.847 MeV [5.434 MeV] (C\_Se:5)

82Se34 + 2 D\* --> 82Se34 + 4He2 + 23.847 MeV [5.577 MeV] (C\_Se:6)

----- Equations follow for Bromine, Br, element 35 -----

79Br35 + 2 D\* --> 79Br35 + 4He2 + 23.847 MeV [4.832 MeV] (C\_Br:1)

81Br35 + 2 D\* --> 81Br35 + 4He2 + 23.847 MeV [4.982 MeV] (C\_Br:2)

----- Equations follow for Krypton, Kr, element 36 -----

78Kr36 + 2 D\* --> 78Kr36 + 4He2 + 23.847 MeV [4.224 MeV] (C\_Kr:1)

80Kr36 + 2 D\* --> 80Kr36 + 4He2 + 23.847 MeV [4.381 MeV] (C\_Kr:2)

82Kr36 + 2 D\* --> 82Kr36 + 4He2 + 23.847 MeV [4.533 MeV] (C\_Kr:3)

83Kr36 + 2 D\* --> 83Kr36 + 4He2 + 23.847 MeV [4.608 MeV] (C\_Kr:4)

84Kr36 + 2 D\* --> 84Kr36 + 4He2 + 23.847 MeV [4.681 MeV] (C\_Kr:5)

86Kr36 + 2 D\* --> 86Kr36 + 4He2 + 23.847 MeV [4.824 MeV] (C\_Kr:6)

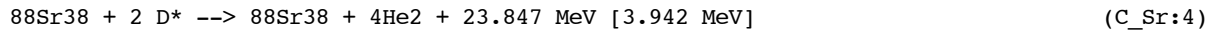
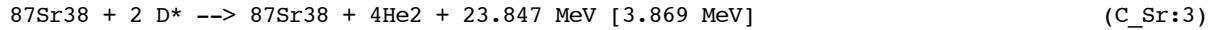
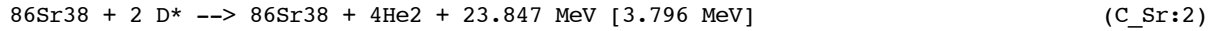
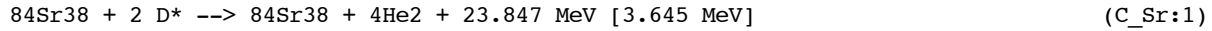
----- Equations follow for Rubidium, Rb, element 37 -----

85Rb37 + 2 D\* --> 85Rb37 + 4He2 + 23.847 MeV [4.237 MeV] (C\_Rb:1)

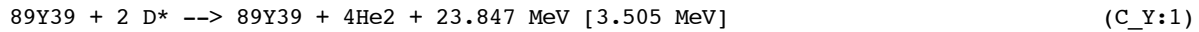
87Rb37 + 2 D\* --> 87Rb37 + 4He2 + 23.847 MeV [4.382 MeV] (C\_Rb:2)

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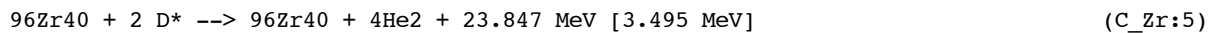
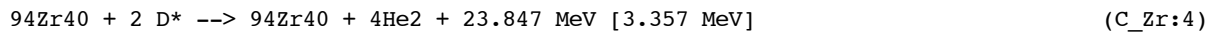
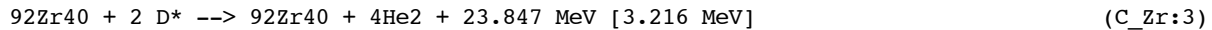
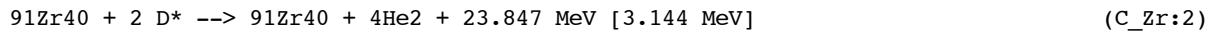
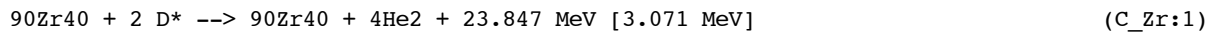
----- Equations follow for Strontium, Sr, element 38 -----



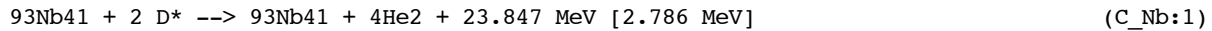
----- Equations follow for Yttrium, Y, element 39 -----



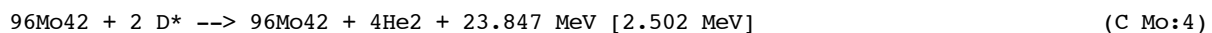
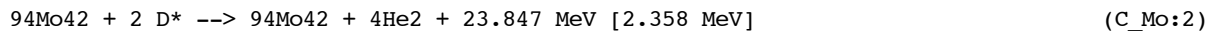
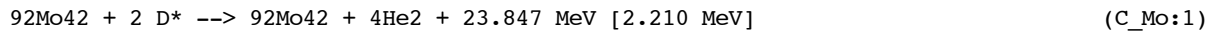
----- Equations follow for Zirconium, Zr, element 40 -----



----- Equations follow for Niobium, Nb, element 41 -----



----- Equations follow for Molybdenum, Mo, element 42 -----



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97Mo42 + 2 D\* --> 97Mo42 + 4He2 + 23.847 MeV [2.573 MeV] (C\_Mo:5)

98Mo42 + 2 D\* --> 98Mo42 + 4He2 + 23.847 MeV [2.643 MeV] (C\_Mo:6)

100Mo42 + 2 D\* --> 100Mo42 + 4He2 + 23.847 MeV [2.779 MeV] (C\_Mo:7)

----- Equations follow for Ruthenium, Ru, element 44 -----

96Ru44 + 2 D\* --> 96Ru44 + 4He2 + 23.847 MeV [1.509 MeV] (C\_Ru:1)

98Ru44 + 2 D\* --> 98Ru44 + 4He2 + 23.847 MeV [1.656 MeV] (C\_Ru:2)

99Ru44 + 2 D\* --> 99Ru44 + 4He2 + 23.847 MeV [1.728 MeV] (C\_Ru:3)

100Ru44 + 2 D\* --> 100Ru44 + 4He2 + 23.847 MeV [1.799 MeV] (C\_Ru:4)

101Ru44 + 2 D\* --> 101Ru44 + 4He2 + 23.847 MeV [1.870 MeV] (C\_Ru:5)

102Ru44 + 2 D\* --> 102Ru44 + 4He2 + 23.847 MeV [1.939 MeV] (C\_Ru:6)

104Ru44 + 2 D\* --> 104Ru44 + 4He2 + 23.847 MeV [2.075 MeV] (C\_Ru:7)

----- Equations follow for Rhodium, Rh, element 45 -----

103Rh45 + 2 D\* --> 103Rh45 + 4He2 + 23.847 MeV [1.522 MeV] (C\_Rh:1)

----- Equations follow for Palladium, Pd, element 46 -----

102Pd46 + 2 D\* --> 102Pd46 + 4He2 + 23.847 MeV [00.965 MeV] (C\_Pd:1)

104Pd46 + 2 D\* --> 104Pd46 + 4He2 + 23.847 MeV [1.107 MeV] (C\_Pd:2)

105Pd46 + 2 D\* --> 105Pd46 + 4He2 + 23.847 MeV [1.177 MeV] (C\_Pd:3)

106Pd46 + 2 D\* --> 106Pd46 + 4He2 + 23.847 MeV [1.246 MeV] (C\_Pd:4)

108Pd46 + 2 D\* --> 108Pd46 + 4He2 + 23.847 MeV [1.381 MeV] (C\_Pd:5)

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110Pd46 + 2 D\* --> 110Pd46 + 4He2 + 23.847 MeV [1.514 MeV] (C\_Pd:6)

----- Equations follow for Silver, Ag, element 47 -----

107Ag47 + 2 D\* --> 107Ag47 + 4He2 + 23.847 MeV [00.835 MeV] (C\_Ag:1)

109Ag47 + 2 D\* --> 109Ag47 + 4He2 + 23.847 MeV [00.971 MeV] (C\_Ag:2)

----- Equations follow for Cadmium, Cd, element 48 -----

106Cd48 + 2 D\* --> 106Cd48 + 4He2 + 23.847 MeV [00.284 MeV] (C\_Cd:1)

108Cd48 + 2 D\* --> 108Cd48 + 4He2 + 23.847 MeV [00.426 MeV] (C\_Cd:2)

110Cd48 + 2 D\* --> 110Cd48 + 4He2 + 23.847 MeV [00.563 MeV] (C\_Cd:3)

111Cd48 + 2 D\* --> 111Cd48 + 4He2 + 23.847 MeV [00.631 MeV] (C\_Cd:4)

112Cd48 + 2 D\* --> 112Cd48 + 4He2 + 23.847 MeV [00.698 MeV] (C\_Cd:5)

113Cd48 + 2 D\* --> 113Cd48 + 4He2 + 23.847 MeV [00.764 MeV] (C\_Cd:6)

114Cd48 + 2 D\* --> 114Cd48 + 4He2 + 23.847 MeV [00.829 MeV] (C\_Cd:7)

116Cd48 + 2 D\* --> 116Cd48 + 4He2 + 23.847 MeV [00.958 MeV] (C\_Cd:8)

----- Equations follow for Indium, In, element 49 -----

113In49 + 2 D\* --> 113In49 + 4He2 + 23.847 MeV [00.293 MeV] (C\_In:1)

115In49 + 2 D\* --> 115In49 + 4He2 + 23.847 MeV [00.426 MeV] (C\_In:2)

----- Equations follow for Tin, Sn, element 50 -----

112Sn50 + 2 D\* --> 112Sn50 + 4He2 + 23.847 MeV [-0.247 MeV] (C\_Sn:1)

114Sn50 + 2 D\* --> 114Sn50 + 4He2 + 23.847 MeV [-0.110 MeV] (C\_Sn:2)

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115Sn50 + 2 D\* --> 115Sn50 + 4He2 + 23.847 MeV [-0.043 MeV] (C\_Sn:3)

116Sn50 + 2 D\* --> 116Sn50 + 4He2 + 23.847 MeV [00.024 MeV] (C\_Sn:4)

117Sn50 + 2 D\* --> 117Sn50 + 4He2 + 23.847 MeV [00.090 MeV] (C\_Sn:5)

118Sn50 + 2 D\* --> 118Sn50 + 4He2 + 23.847 MeV [00.155 MeV] (C\_Sn:6)

119Sn50 + 2 D\* --> 119Sn50 + 4He2 + 23.847 MeV [00.219 MeV] (C\_Sn:7)

120Sn50 + 2 D\* --> 120Sn50 + 4He2 + 23.847 MeV [00.283 MeV] (C\_Sn:8)

122Sn50 + 2 D\* --> 122Sn50 + 4He2 + 23.847 MeV [00.408 MeV] (C\_Sn:9)

124Sn50 + 2 D\* --> 124Sn50 + 4He2 + 23.847 MeV [00.531 MeV] (C\_Sn:10)

----- Equations follow for Antimony, Sb, element 51 -----

121Sb51 + 2 D\* --> 121Sb51 + 4He2 + 23.847 MeV [-0.115 MeV] (C\_Sb:1)

123Sb51 + 2 D\* --> 123Sb51 + 4He2 + 23.847 MeV [00.011 MeV] (C\_Sb:2)

----- Equations follow for Tellurium, Te, element 52 -----

120Te52 + 2 D\* --> 120Te52 + 4He2 + 23.847 MeV [-0.641 MeV] (C\_Te:1)

122Te52 + 2 D\* --> 122Te52 + 4He2 + 23.847 MeV [-0.511 MeV] (C\_Te:2)

123Te52 + 2 D\* --> 123Te52 + 4He2 + 23.847 MeV [-0.447 MeV] (C\_Te:3)

124Te52 + 2 D\* --> 124Te52 + 4He2 + 23.847 MeV [-0.384 MeV] (C\_Te:4)

125Te52 + 2 D\* --> 125Te52 + 4He2 + 23.847 MeV [-0.321 MeV] (C\_Te:5)

126Te52 + 2 D\* --> 126Te52 + 4He2 + 23.847 MeV [-0.259 MeV] (C\_Te:6)

128Te52 + 2 D\* --> 128Te52 + 4He2 + 23.847 MeV [-0.136 MeV] (C\_Te:7)

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130Te52 + 2 D\* --> 130Te52 + 4He2 + 23.847 MeV [-0.016 MeV] (C\_Te:8)

----- Equations follow for Iodine, I, element 53 -----

127I53 + 2 D\* --> 127I53 + 4He2 + 23.847 MeV [-0.651 MeV] (C\_I:1)

----- Equations follow for Xenon, Xe, element 54 -----

124Xe54 + 2 D\* --> 124Xe54 + 4He2 + 23.847 MeV [-1.298 MeV] (C\_Xe:1)

126Xe54 + 2 D\* --> 126Xe54 + 4He2 + 23.847 MeV [-1.168 MeV] (C\_Xe:2)

128Xe54 + 2 D\* --> 128Xe54 + 4He2 + 23.847 MeV [-1.041 MeV] (C\_Xe:3)

129Xe54 + 2 D\* --> 129Xe54 + 4He2 + 23.847 MeV [-0.979 MeV] (C\_Xe:4)

130Xe54 + 2 D\* --> 130Xe54 + 4He2 + 23.847 MeV [-0.917 MeV] (C\_Xe:5)

131Xe54 + 2 D\* --> 131Xe54 + 4He2 + 23.847 MeV [-0.856 MeV] (C\_Xe:6)

132Xe54 + 2 D\* --> 132Xe54 + 4He2 + 23.847 MeV [-0.795 MeV] (C\_Xe:7)

134Xe54 + 2 D\* --> 134Xe54 + 4He2 + 23.847 MeV [-0.675 MeV] (C\_Xe:8)

136Xe54 + 2 D\* --> 136Xe54 + 4He2 + 23.847 MeV [-0.558 MeV] (C\_Xe:9)

----- Equations follow for Cesium, Cs, element 55 -----

133Cs55 + 2 D\* --> 133Cs55 + 4He2 + 23.847 MeV [-1.182 MeV] (C\_Cs:1)

----- Equations follow for Barium, Ba, element 56 -----

130Ba56 + 2 D\* --> 130Ba56 + 4He2 + 23.847 MeV [-1.817 MeV] (C\_Ba:1)

132Ba56 + 2 D\* --> 132Ba56 + 4He2 + 23.847 MeV [-1.691 MeV] (C\_Ba:2)

134Ba56 + 2 D\* --> 134Ba56 + 4He2 + 23.847 MeV [-1.567 MeV] (C\_Ba:3)

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135Ba56 + 2 D\* --> 135Ba56 + 4He2 + 23.847 MeV [-1.506 MeV] (C\_Ba:4)

136Ba56 + 2 D\* --> 136Ba56 + 4He2 + 23.847 MeV [-1.445 MeV] (C\_Ba:5)

137Ba56 + 2 D\* --> 137Ba56 + 4He2 + 23.847 MeV [-1.385 MeV] (C\_Ba:6)

138Ba56 + 2 D\* --> 138Ba56 + 4He2 + 23.847 MeV [-1.326 MeV] (C\_Ba:7)

----- Equations follow for Lanthanum, La, element 57 -----

138La57 + 2 D\* --> 138La57 + 4He2 + 23.847 MeV [-1.768 MeV] (C\_La:1)

139La57 + 2 D\* --> 139La57 + 4He2 + 23.847 MeV [-1.708 MeV] (C\_La:2)

----- Equations follow for Cerium, Ce, element 58 -----

136Ce58 + 2 D\* --> 136Ce58 + 4He2 + 23.847 MeV [-2.333 MeV] (C\_Ce:1)

138Ce58 + 2 D\* --> 138Ce58 + 4He2 + 23.847 MeV [-2.209 MeV] (C\_Ce:2)

140Ce58 + 2 D\* --> 140Ce58 + 4He2 + 23.847 MeV [-2.088 MeV] (C\_Ce:3)

142Ce58 + 2 D\* --> 142Ce58 + 4He2 + 23.847 MeV [-1.969 MeV] (C\_Ce:4)

----- Equations follow for Praseodymium, Pr, element 59 -----

141Pr59 + 2 D\* --> 141Pr59 + 4He2 + 23.847 MeV [-2.467 MeV] (C\_Pr:1)

----- Equations follow for Neodymium, Nd, element 60 -----

142Nd60 + 2 D\* --> 142Nd60 + 4He2 + 23.847 MeV [-2.844 MeV] (C\_Nd:1)

143Nd60 + 2 D\* --> 143Nd60 + 4He2 + 23.847 MeV [-2.784 MeV] (C\_Nd:2)

144Nd60 + 2 D\* --> 144Nd60 + 4He2 + 23.847 MeV [-2.723 MeV] (C\_Nd:3)

145Nd60 + 2 D\* --> 145Nd60 + 4He2 + 23.847 MeV [-2.664 MeV] (C\_Nd:4)

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146Nd60 + 2 D\* --> 146Nd60 + 4He2 + 23.847 MeV [-2.605 MeV] (C\_Nd:5)

148Nd60 + 2 D\* --> 148Nd60 + 4He2 + 23.847 MeV [-2.488 MeV] (C\_Nd:6)

150Nd60 + 2 D\* --> 150Nd60 + 4He2 + 23.847 MeV [-2.374 MeV] (C\_Nd:7)

----- Equations follow for Samarium, Sm, element 62 -----

144Sm62 + 2 D\* --> 144Sm62 + 4He2 + 23.847 MeV [-3.595 MeV] (C\_Sm:1)

147Sm62 + 2 D\* --> 147Sm62 + 4He2 + 23.847 MeV [-3.412 MeV] (C\_Sm:2)

148Sm62 + 2 D\* --> 148Sm62 + 4He2 + 23.847 MeV [-3.352 MeV] (C\_Sm:3)

149Sm62 + 2 D\* --> 149Sm62 + 4He2 + 23.847 MeV [-3.292 MeV] (C\_Sm:4)

150Sm62 + 2 D\* --> 150Sm62 + 4He2 + 23.847 MeV [-3.234 MeV] (C\_Sm:5)

152Sm62 + 2 D\* --> 152Sm62 + 4He2 + 23.847 MeV [-3.117 MeV] (C\_Sm:6)

154Sm62 + 2 D\* --> 154Sm62 + 4He2 + 23.847 MeV [-3.003 MeV] (C\_Sm:7)

----- Equations follow for Europium, Eu, element 63 -----

151Eu63 + 2 D\* --> 151Eu63 + 4He2 + 23.847 MeV [-3.604 MeV] (C\_Eu:1)

153Eu63 + 2 D\* --> 153Eu63 + 4He2 + 23.847 MeV [-3.487 MeV] (C\_Eu:2)

----- Equations follow for Gadolinium, Gd, element 64 -----

152Gd64 + 2 D\* --> 152Gd64 + 4He2 + 23.847 MeV [-3.973 MeV] (C\_Gd:1)

154Gd64 + 2 D\* --> 154Gd64 + 4He2 + 23.847 MeV [-3.855 MeV] (C\_Gd:2)

155Gd64 + 2 D\* --> 155Gd64 + 4He2 + 23.847 MeV [-3.797 MeV] (C\_Gd:3)

156Gd64 + 2 D\* --> 156Gd64 + 4He2 + 23.847 MeV [-3.739 MeV] (C\_Gd:4)

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157Gd64 + 2 D\* --> 157Gd64 + 4He2 + 23.847 MeV [-3.682 MeV] (C\_Gd:5)

158Gd64 + 2 D\* --> 158Gd64 + 4He2 + 23.847 MeV [-3.626 MeV] (C\_Gd:6)

160Gd64 + 2 D\* --> 160Gd64 + 4He2 + 23.847 MeV [-3.513 MeV] (C\_Gd:7)

----- Equations follow for Terbium, Tb, element 65 -----

159Tb65 + 2 D\* --> 159Tb65 + 4He2 + 23.847 MeV [-3.991 MeV] (C\_Tb:1)

----- Equations follow for Dysprosium, Dy, element 66 -----

156Dy66 + 2 D\* --> 156Dy66 + 4He2 + 23.847 MeV [-4.588 MeV] (C\_Dy:1)

158Dy66 + 2 D\* --> 158Dy66 + 4He2 + 23.847 MeV [-4.471 MeV] (C\_Dy:2)

160Dy66 + 2 D\* --> 160Dy66 + 4He2 + 23.847 MeV [-4.355 MeV] (C\_Dy:3)

161Dy66 + 2 D\* --> 161Dy66 + 4He2 + 23.847 MeV [-4.298 MeV] (C\_Dy:4)

162Dy66 + 2 D\* --> 162Dy66 + 4He2 + 23.847 MeV [-4.241 MeV] (C\_Dy:5)

163Dy66 + 2 D\* --> 163Dy66 + 4He2 + 23.847 MeV [-4.185 MeV] (C\_Dy:6)

164Dy66 + 2 D\* --> 164Dy66 + 4He2 + 23.847 MeV [-4.130 MeV] (C\_Dy:7)

----- Equations follow for Holmium, Ho, element 67 -----

165Ho67 + 2 D\* --> 165Ho67 + 4He2 + 23.847 MeV [-4.491 MeV] (C\_Ho:1)

----- Equations follow for Erbium, Er, element 68 -----

162Er68 + 2 D\* --> 162Er68 + 4He2 + 23.847 MeV [-5.080 MeV] (C\_Er:1)

164Er68 + 2 D\* --> 164Er68 + 4He2 + 23.847 MeV [-4.965 MeV] (C\_Er:2)

166Er68 + 2 D\* --> 166Er68 + 4He2 + 23.847 MeV [-4.851 MeV] (C\_Er:3)

167Er68 + 2 D\* --> 167Er68 + 4He2 + 23.847 MeV [-4.795 MeV] (C\_Er:4)

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168Er68 + 2 D\* --> 168Er68 + 4He2 + 23.847 MeV [-4.740 MeV] (C\_Er:5)

170Er68 + 2 D\* --> 170Er68 + 4He2 + 23.847 MeV [-4.630 MeV] (C\_Er:6)

----- Equations follow for Thulium, Tm, element 69 -----

169Tm69 + 2 D\* --> 169Tm69 + 4He2 + 23.847 MeV [-5.098 MeV] (C\_Tm:1)

----- Equations follow for Ytterbium, Yb, element 70 -----

168Yb70 + 2 D\* --> 168Yb70 + 4He2 + 23.847 MeV [-5.568 MeV] (C\_Yb:1)

170Yb70 + 2 D\* --> 170Yb70 + 4He2 + 23.847 MeV [-5.455 MeV] (C\_Yb:2)

171Yb70 + 2 D\* --> 171Yb70 + 4He2 + 23.847 MeV [-5.399 MeV] (C\_Yb:3)

172Yb70 + 2 D\* --> 172Yb70 + 4He2 + 23.847 MeV [-5.344 MeV] (C\_Yb:4)

173Yb70 + 2 D\* --> 173Yb70 + 4He2 + 23.847 MeV [-5.289 MeV] (C\_Yb:5)

174Yb70 + 2 D\* --> 174Yb70 + 4He2 + 23.847 MeV [-5.234 MeV] (C\_Yb:6)

176Yb70 + 2 D\* --> 176Yb70 + 4He2 + 23.847 MeV [-5.126 MeV] (C\_Yb:7)

----- Equations follow for Lutetium, Lu, element 71 -----

175Lu71 + 2 D\* --> 175Lu71 + 4He2 + 23.847 MeV [-5.588 MeV] (C\_Lu:1)

176Lu71 + 2 D\* --> 176Lu71 + 4He2 + 23.847 MeV [-5.534 MeV] (C\_Lu:2)

----- Equations follow for Hafnium, Hf, element 72 -----

174Hf72 + 2 D\* --> 174Hf72 + 4He2 + 23.847 MeV [-6.053 MeV] (C\_Hf:1)

176Hf72 + 2 D\* --> 176Hf72 + 4He2 + 23.847 MeV [-5.942 MeV] (C\_Hf:2)

177Hf72 + 2 D\* --> 177Hf72 + 4He2 + 23.847 MeV [-5.887 MeV] (C\_Hf:3)

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178Hf72 + 2 D\* --> 178Hf72 + 4He2 + 23.847 MeV [-5.832 MeV] (C\_Hf:4)

179Hf72 + 2 D\* --> 179Hf72 + 4He2 + 23.847 MeV [-5.778 MeV] (C\_Hf:5)

180Hf72 + 2 D\* --> 180Hf72 + 4He2 + 23.847 MeV [-5.724 MeV] (C\_Hf:6)

----- Equations follow for Tantalum, Ta, element 73 -----

180Ta73 + 2 D\* --> 180Ta73 + 4He2 + 23.847 MeV [-6.130 MeV] (C\_Ta:1)

181Ta73 + 2 D\* --> 181Ta73 + 4He2 + 23.847 MeV [-6.075 MeV] (C\_Ta:2)

----- Equations follow for Tungsten, W, element 74 -----

180W74 + 2 D\* --> 180W74 + 4He2 + 23.847 MeV [-6.535 MeV] (C\_W:1)

182W74 + 2 D\* --> 182W74 + 4He2 + 23.847 MeV [-6.425 MeV] (C\_W:2)

183W74 + 2 D\* --> 183W74 + 4He2 + 23.847 MeV [-6.371 MeV] (C\_W:3)

184W74 + 2 D\* --> 184W74 + 4He2 + 23.847 MeV [-6.318 MeV] (C\_W:4)

186W74 + 2 D\* --> 186W74 + 4He2 + 23.847 MeV [-6.211 MeV] (C\_W:5)

----- Equations follow for Rhenium, Re, element 75 -----

185Re75 + 2 D\* --> 185Re75 + 4He2 + 23.847 MeV [-6.666 MeV] (C\_Re:1)

187Re75 + 2 D\* --> 187Re75 + 4He2 + 23.847 MeV [-6.559 MeV] (C\_Re:2)

----- Equations follow for Osmium, Os, element 76 -----

184Os76 + 2 D\* --> 184Os76 + 4He2 + 23.847 MeV [-7.122 MeV] (C\_Os:1)

186Os76 + 2 D\* --> 186Os76 + 4He2 + 23.847 MeV [-7.013 MeV] (C\_Os:2)

187Os76 + 2 D\* --> 187Os76 + 4He2 + 23.847 MeV [-6.959 MeV] (C\_Os:3)

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188Os76 + 2 D\* --> 188Os76 + 4He2 + 23.847 MeV [-6.905 MeV] (C\_Os:4)

189Os76 + 2 D\* --> 189Os76 + 4He2 + 23.847 MeV [-6.852 MeV] (C\_Os:5)

190Os76 + 2 D\* --> 190Os76 + 4He2 + 23.847 MeV [-6.799 MeV] (C\_Os:6)

192Os76 + 2 D\* --> 192Os76 + 4He2 + 23.847 MeV [-6.695 MeV] (C\_Os:7)

----- Equations follow for Iridium, Ir, element 77 -----

191Ir77 + 2 D\* --> 191Ir77 + 4He2 + 23.847 MeV [-7.144 MeV] (C\_Ir:1)

193Ir77 + 2 D\* --> 193Ir77 + 4He2 + 23.847 MeV [-7.039 MeV] (C\_Ir:2)

----- Equations follow for Platinum, Pt, element 78 -----

190Pt78 + 2 D\* --> 190Pt78 + 4He2 + 23.847 MeV [-7.595 MeV] (C\_Pt:1)

192Pt78 + 2 D\* --> 192Pt78 + 4He2 + 23.847 MeV [-7.488 MeV] (C\_Pt:2)

194Pt78 + 2 D\* --> 194Pt78 + 4He2 + 23.847 MeV [-7.382 MeV] (C\_Pt:3)

195Pt78 + 2 D\* --> 195Pt78 + 4He2 + 23.847 MeV [-7.330 MeV] (C\_Pt:4)

196Pt78 + 2 D\* --> 196Pt78 + 4He2 + 23.847 MeV [-7.278 MeV] (C\_Pt:5)

198Pt78 + 2 D\* --> 198Pt78 + 4He2 + 23.847 MeV [-7.175 MeV] (C\_Pt:6)

----- Equations follow for Gold, Au, element 79 -----

197Au79 + 2 D\* --> 197Au79 + 4He2 + 23.847 MeV [-7.619 MeV] (C\_Au:1)

----- Equations follow for Mercury, Hg, element 80 -----

196Hg80 + 2 D\* --> 196Hg80 + 4He2 + 23.847 MeV [-8.066 MeV] (C\_Hg:1)

198Hg80 + 2 D\* --> 198Hg80 + 4He2 + 23.847 MeV [-7.960 MeV] (C\_Hg:2)

199Hg80 + 2 D\* --> 199Hg80 + 4He2 + 23.847 MeV [-7.908 MeV] (C\_Hg:3)

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200Hg80 + 2 D\* --> 200Hg80 + 4He2 + 23.847 MeV [-7.856 MeV] (C\_Hg:4)

201Hg80 + 2 D\* --> 201Hg80 + 4He2 + 23.847 MeV [-7.804 MeV] (C\_Hg:5)

202Hg80 + 2 D\* --> 202Hg80 + 4He2 + 23.847 MeV [-7.753 MeV] (C\_Hg:6)

204Hg80 + 2 D\* --> 204Hg80 + 4He2 + 23.847 MeV [-7.651 MeV] (C\_Hg:7)

----- Equations follow for Thallium, Tl, element 81 -----

203Tl81 + 2 D\* --> 203Tl81 + 4He2 + 23.847 MeV [-8.091 MeV] (C\_Tl:1)

205Tl81 + 2 D\* --> 205Tl81 + 4He2 + 23.847 MeV [-7.989 MeV] (C\_Tl:2)

----- Equations follow for Lead, Pb, element 82 -----

204Pb82 + 2 D\* --> 204Pb82 + 4He2 + 23.847 MeV [-8.429 MeV] (C\_Pb:1)

206Pb82 + 2 D\* --> 206Pb82 + 4He2 + 23.847 MeV [-8.326 MeV] (C\_Pb:2)

207Pb82 + 2 D\* --> 207Pb82 + 4He2 + 23.847 MeV [-8.275 MeV] (C\_Pb:3)

208Pb82 + 2 D\* --> 208Pb82 + 4He2 + 23.847 MeV [-8.225 MeV] (C\_Pb:4)

----- Equations follow for Bismuth, Bi, element 83 -----

209Bi83 + 2 D\* --> 209Bi83 + 4He2 + 23.847 MeV [-8.560 MeV] (C\_Bi:1)

----- Equations follow for Thorium, Th, element 90 -----

232Th90 + 2 D\* --> 232Th90 + 4He2 + 23.847 MeV [-10.081 MeV] (C\_Th:1)

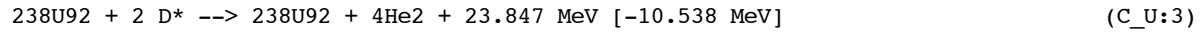
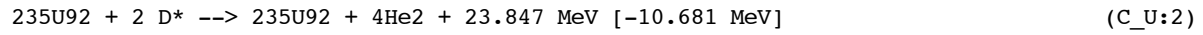
----- Equations follow for Protactinium, Pa, element 91 -----

231Pa91 + 2 D\* --> 231Pa91 + 4He2 + 23.847 MeV [-10.502 MeV] (C\_Pa:1)

----- Equations follow for Uranium, U, element 92 -----

234U92 + 2 D\* --> 234U92 + 4He2 + 23.847 MeV [-10.729 MeV] (C\_U:1)

Report C - Energetically Feasible Aneutronic  $X + n D^* \rightarrow X + Z$  Reactions,  $n = 1$  to  $2$   
Creating Stable Isotope  $Z$  Via Nuclear Catalytic Action



Total number of reaction equations: 288

Maximum number of D fused with X: 2

Adjustment factor to compound nucleus radius: 1

Energy threshold for including reaction, in eV: 10

Note -  $D^*$  denotes a deflated state hydrogen nucleus, including the electron

Note - the energy in brackets is initial compound nucleus net energy,

i.e. the fusion energy less the deflated electron energy deficit