

Structure of the Sun

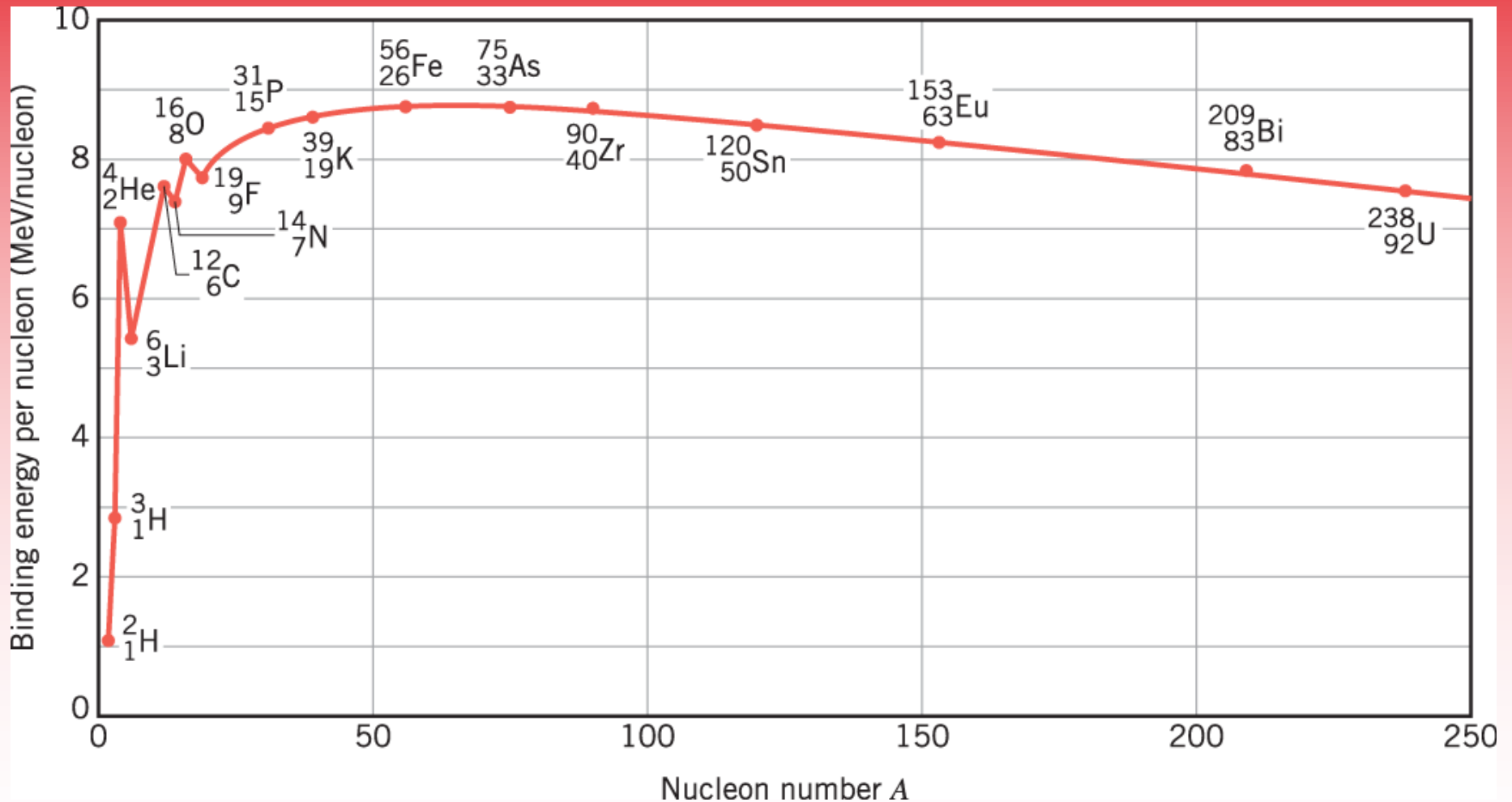
Physics 090

2020-03-27

Group→	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
↓Period																			
1	1 H																		2 He
2	3 Li	4 Be											5 B	6 C	7 N	8 O	9 F		10 Ne
3	11 Na	12 Mg											13 Al	14 Si	15 P	16 S	17 Cl		18 Ar
4	19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br		36 Kr
5	37 Rb	38 Sr	39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I		54 Xe
6	55 Cs	56 Ba	* 71 Lu	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85 At		86 Rn
7	87 Fr	88 Ra	* * 103 Lr	104 Rf	105 Db	106 Sg	107 Bh	108 Hs	109 Mt	110 Ds	111 Rg	112 Cn	113 Uut	114 Fl	115 Uup	116 Lv	117 Uus		118 Uuo
			* 57 La	58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb			
			* * 89 Ac	90 Th	91 Pa	92 U	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No			

The Periodic Table

As Important for Physics as for Chemistry



Binding Energy per Nucleon

Makes Fission and Fusion are Both Understandable



Still from B-29 Bomber Film of Mushroom
Cloud over Nagasaki, August 9, 1945

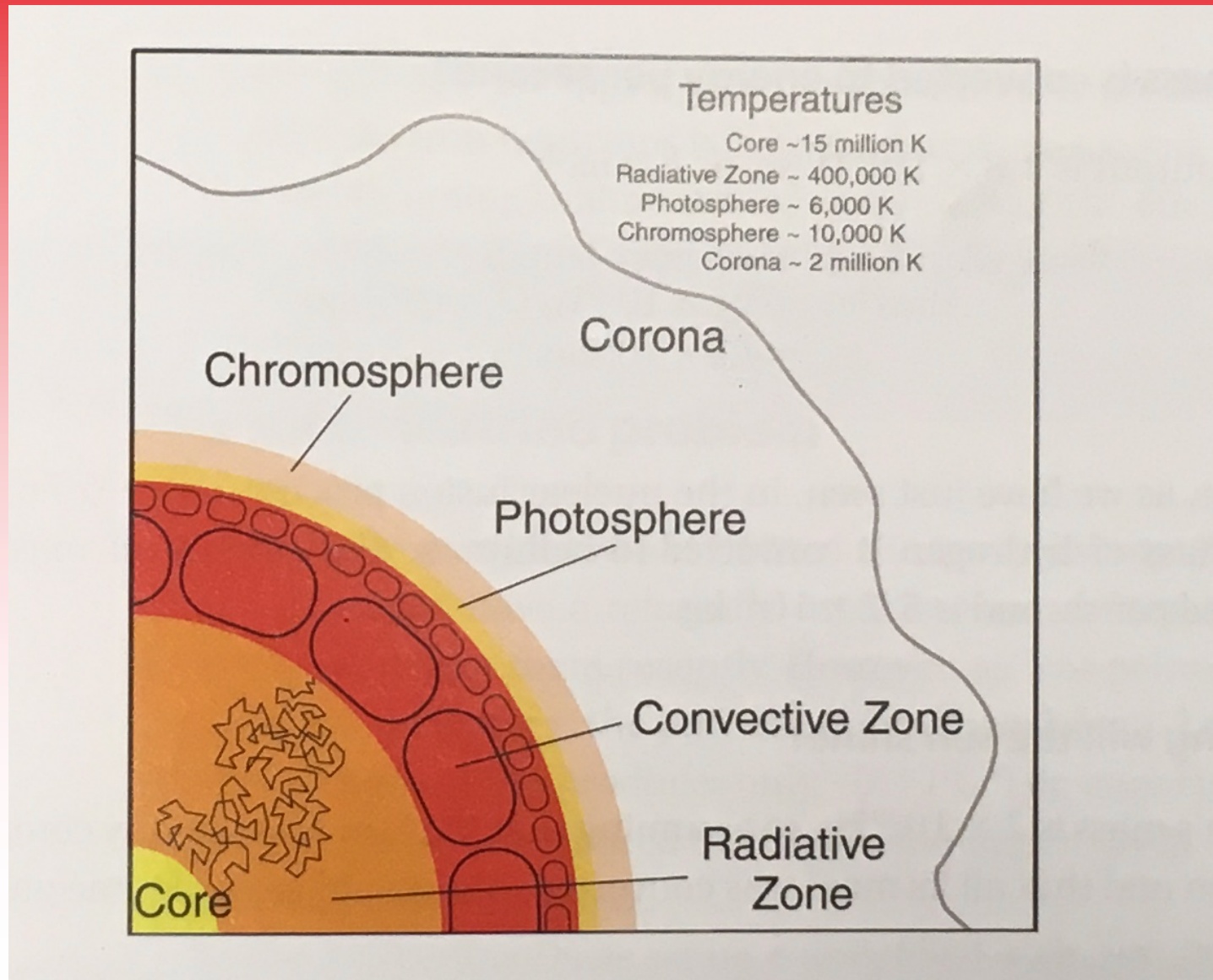
Can watch film on YouTube:
<https://youtu.be/cn0B5QtrOZs>

Hydrogen Bomb or H-Bomb



The First Explosion using Fusion ("Ivy Mike" H-Bomb) came on November 1st, 1952, 7 years after the First Explosion Using Fission ("Trinity" A-Bomb)

Photo: https://en.wikipedia.org/wiki/Ivy_Mike



The Structure of the Sun — Nuclear Fusion only Happens in the Core, which is $>10,000,000\text{K}$ (hot!). The Photosphere (which is the part we see) is a relatively pleasant $5,777\text{K}$.



Image of the solar corona during a total solar eclipse on Monday,
August 21, 2017 near Madras, Oregon.

Credit: NASA, Aubrey Gemignani