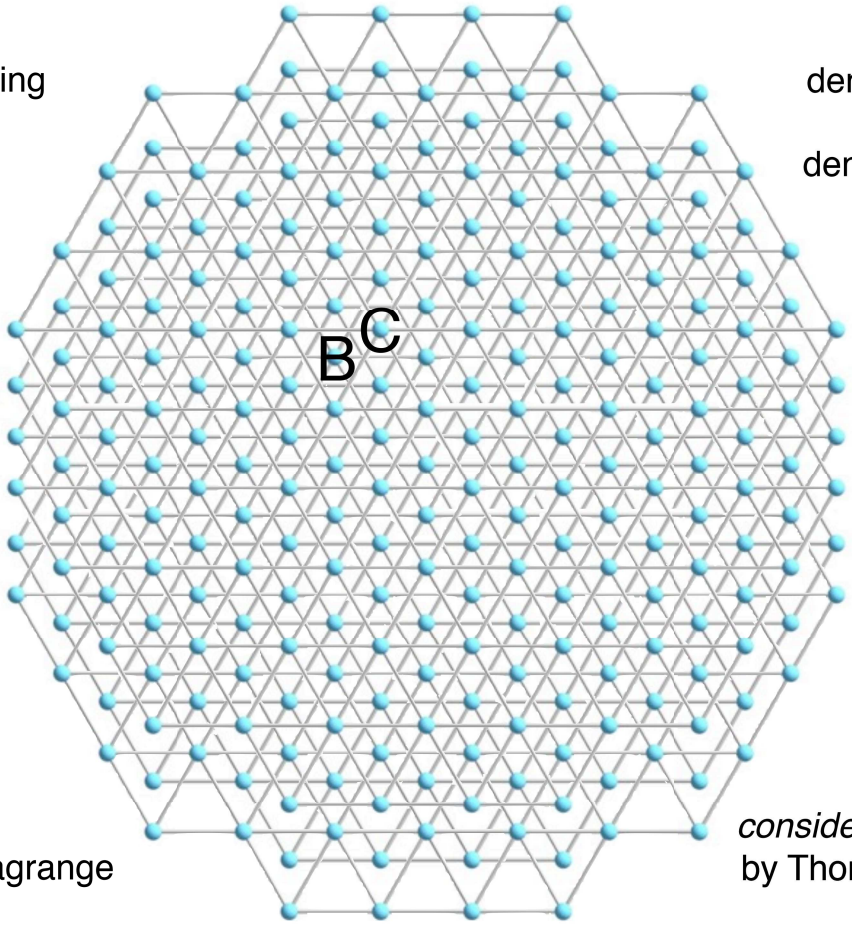
Sphere packings

2D:
dense sphere packing
= hexagonal

3D:
dense sphere packing
= stacking of 2D
densely packed layers



proven in **1773**
by Joseph Louis Lagrange

considered proven in **1998**
by Thomas Callister Hales

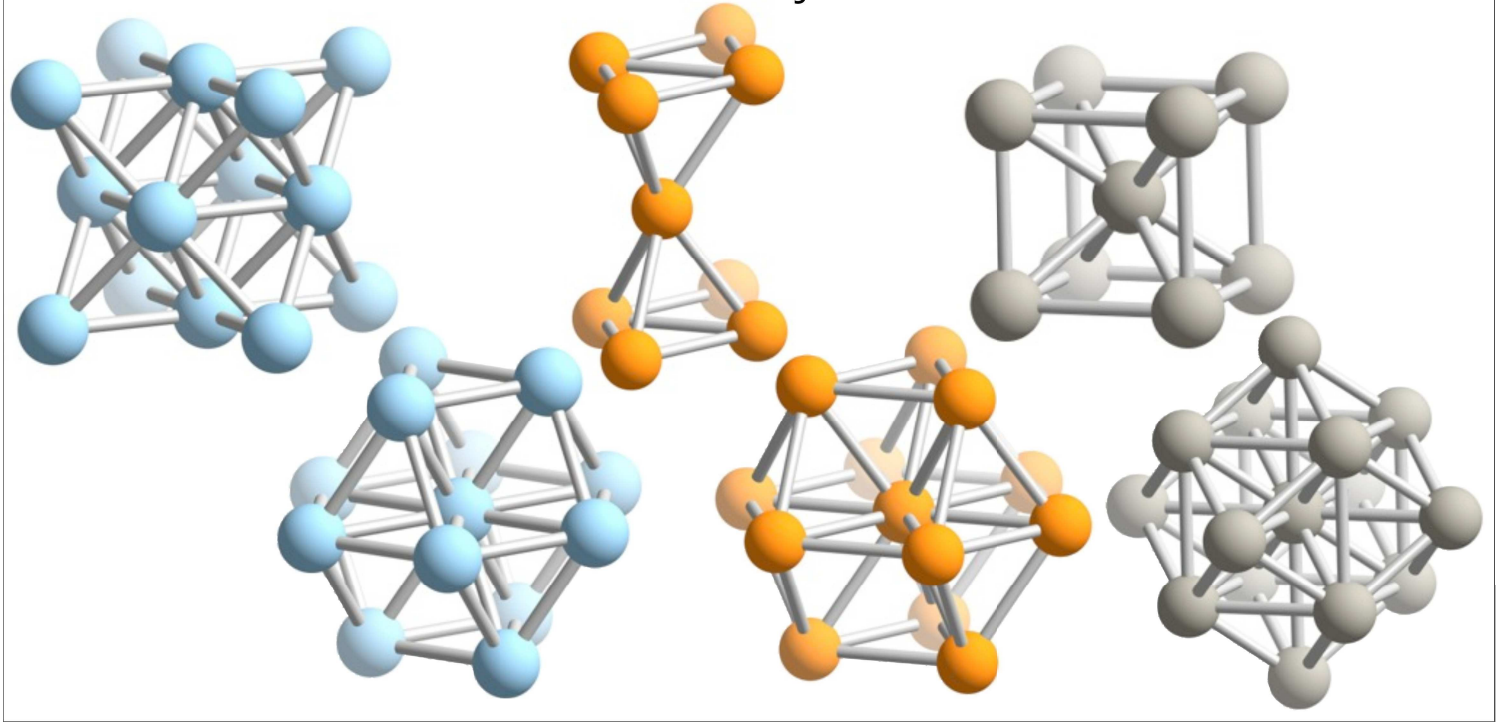
Sphere packings

cubic close packing
ccp *(fcc)*
ABC-stacking
*cF*4-Cu

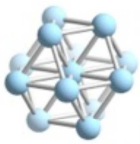
hexagonal close packing
hcp
AB-stacking
*hP*2-Mg

body-centered cubic packing
(bcc)

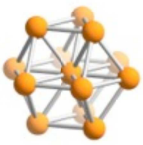
*cI*2-W



Simple metals



*cF*4-Cu



*hP*2-Mg

*cI*2-W

1 H																	2 He
3 Li	4 Be											5 B	6 C	7 N	8 O	9 F	10 Ne
11 Na	12 Mg											13 Al	14 Si	15 P	16 S	17 Cl	18 Ar
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
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
55 Cs	56 Ba	57 La - 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
87 Fr	88 Ra	89 Ac - 103 Lr	104 Rf	105 Db	106 Sg	107 Bh	108 Hs	109 Mt	110 Ds	111 Rg							

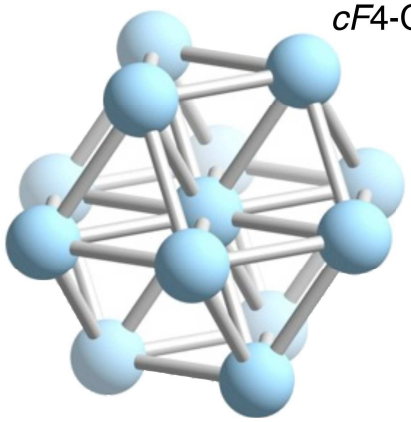
More sphere packings

*cF*4-Cu

C

B

A

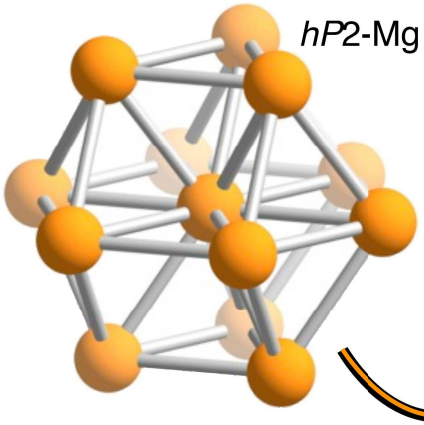


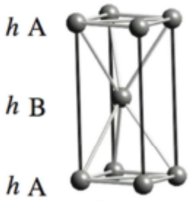
*hP*2-Mg

A

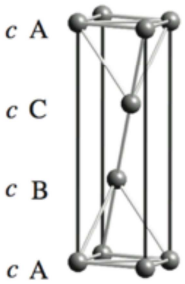
B

A

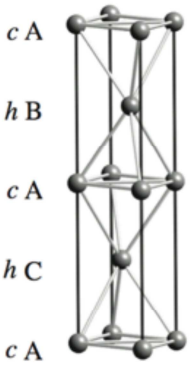




*hR*3-Hg



*hP*4-La



*hR*9-Sm