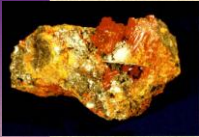


Minerals - Patterns in Nature

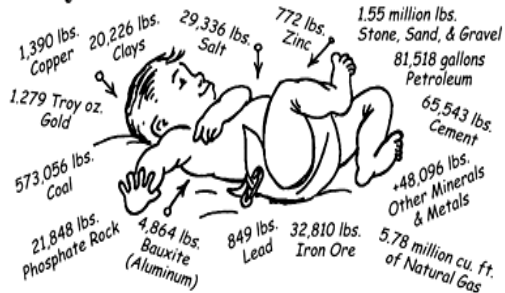


Chapter 5

A mineral is....



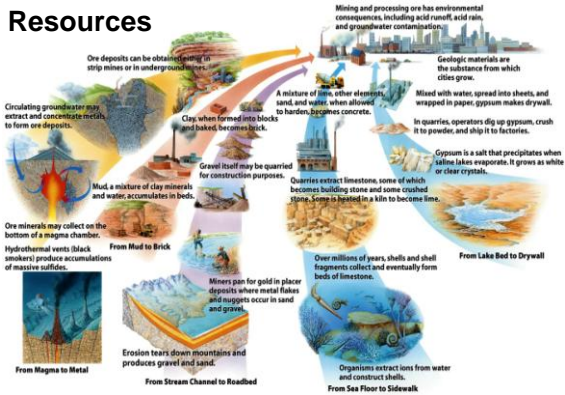
Every American Born Will Need . . .



3.5 million pounds of minerals, metals, and fuels in a lifetime

© 2004 Mineral Information Institute Golden, Colorado

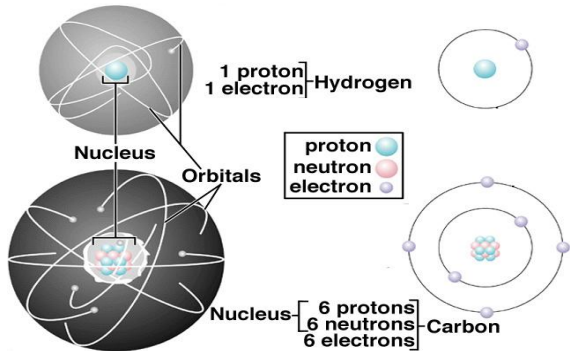
Resources



Page 538 Earth: Portrait of a Planet 3/e
Original artwork by Gary Hincks

CHAPTER 15

Mineral Formation



Periodic Table of Elements

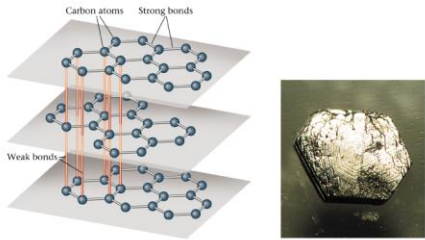
1	IA																2	0
1	H																	He
2	3	4															10	
	Li	Be															Ne	
3	11	12															18	
	Na	Mg															Ar	
4	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
	K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
5	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
6	55	56	57	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86
	Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	
7	87	88	89	104	105	106	107	108	109	110								
	Fr	Ra	Ac	Rf	Ha	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	

* Lanthanide Series: 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, 71 Lu
+ Actinide Series: 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, 103 Lr

Legend - click to find out more...

- H - gas
- Li - solid
- Br - liquid
- Tc - synthetic
- Non-Metals
- Transition Metals
- Rare Earth Metals
- Halogens
- Alkali Metals
- Alkali Earth Metals
- Other Metals
- Inert Elements

Crystal structure (internal)



(e)

(f)

FIGURE 5.7

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Mineral forming processes







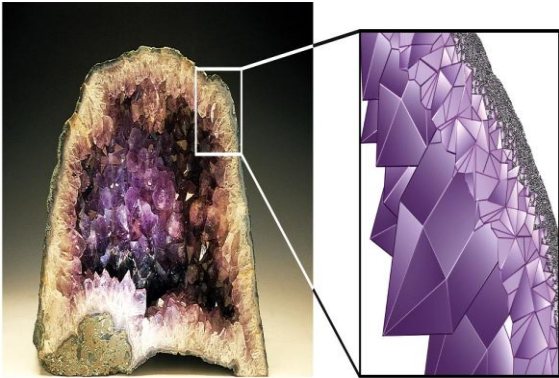


Figure 5-14 Earth: Portrait of a Planet 3/e
© 1996 Jeff Scovill

Iowa's State Rock!

Mineral Classes

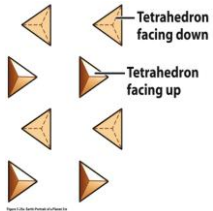
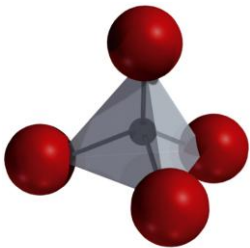
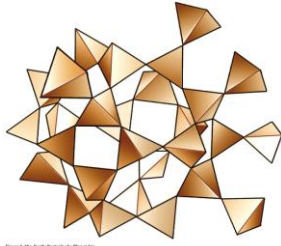
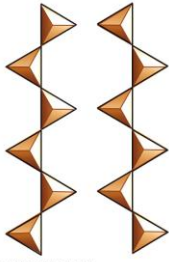
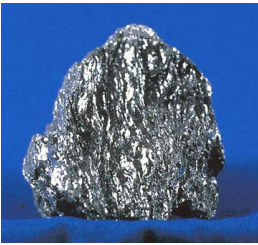


Figure 5-15 Earth: Portrait of a Planet 3/e
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Silicates=Mega Rock Formers



Oxides



Sulfides



Sulfates



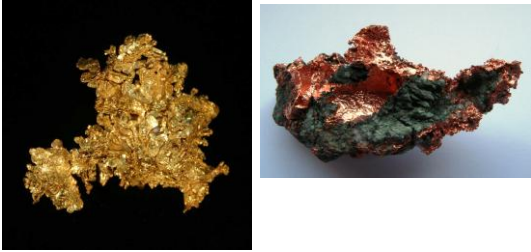
Halides



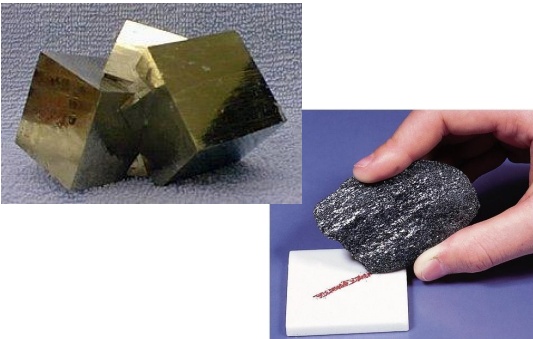
Carbonates



Native metals



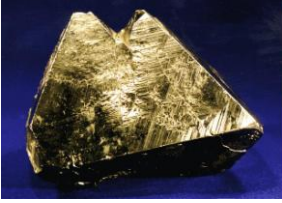
Mineral Physical Properties



Mineral identification



Luster

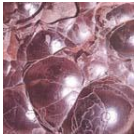


Metallic



Non
Metallic

Color

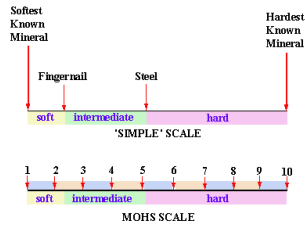


Streak

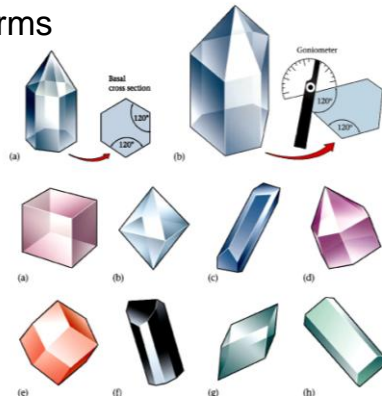


Hardness

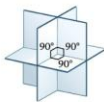
- Finger nail – 2.5
- Penny – 3.5
- Nail - 5
- Glass – 5.5



Crystal forms



Fracture or Cleavage Breakage



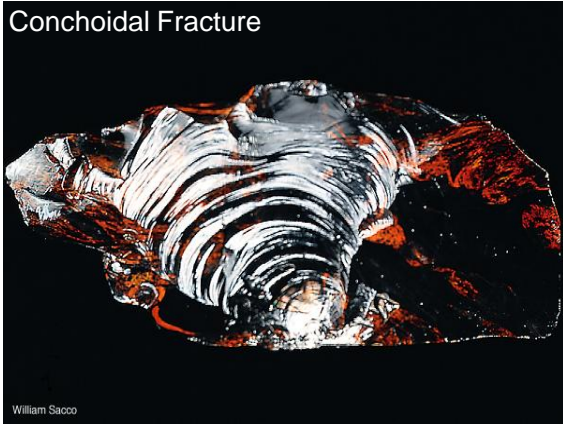
(a), (b), (c)



(d)

(e)

Conchoidal Fracture





Specific gravity

Other properties