The Fascination of Crystals and Symmetry

Unit 2.2

by Frank Hoffmann & Michael Sartor
Morphology of Crystals

7 crystal systems

- triclinic
- monoclinic
- orthorhombic
- tetragonal
- trigonal
- hexagonal
- cubic

Rock Crystal (Quartz, SiO₂)

countless forms of appearance
Morphology of Pyrite

- $\text{FeS}_2$
- cubic crystal system
- space group $Pa3$
- $a = 5.14 \text{ Å}$
- $\text{FeS}_6$ octahedra
- $\text{S-SFe}_3$ tetrahedra
Stacking Cubes – Relative Face Development
- Java tool
- intersection body
  - cube
  - octahedral
  - rhombic dodecahedron
- realistic crystal shapes

Miller indices → next unit

http://www.mima.museum/cinderella1.php
‘Tracht’ (set of faces) and Habitus

- the total set of faces developed on a crystal is called ‘Tracht’ (‘costume’)
- number and composition of faces of the outer limiting planes of a crystal
- the relative face development, i.e. their relative sizes gives rise to the habitus
- two crystals can have the same tracht but different habitus, and they can have the same habitus but different trachts
- habitus: isometric, needle-like, plate-like, cubically, column...
‘Tracht’ (set of faces) and Habitus

different habitus – same tracht
‘Tracht’ (set of faces) and Habitus

same habitus – different tracht
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