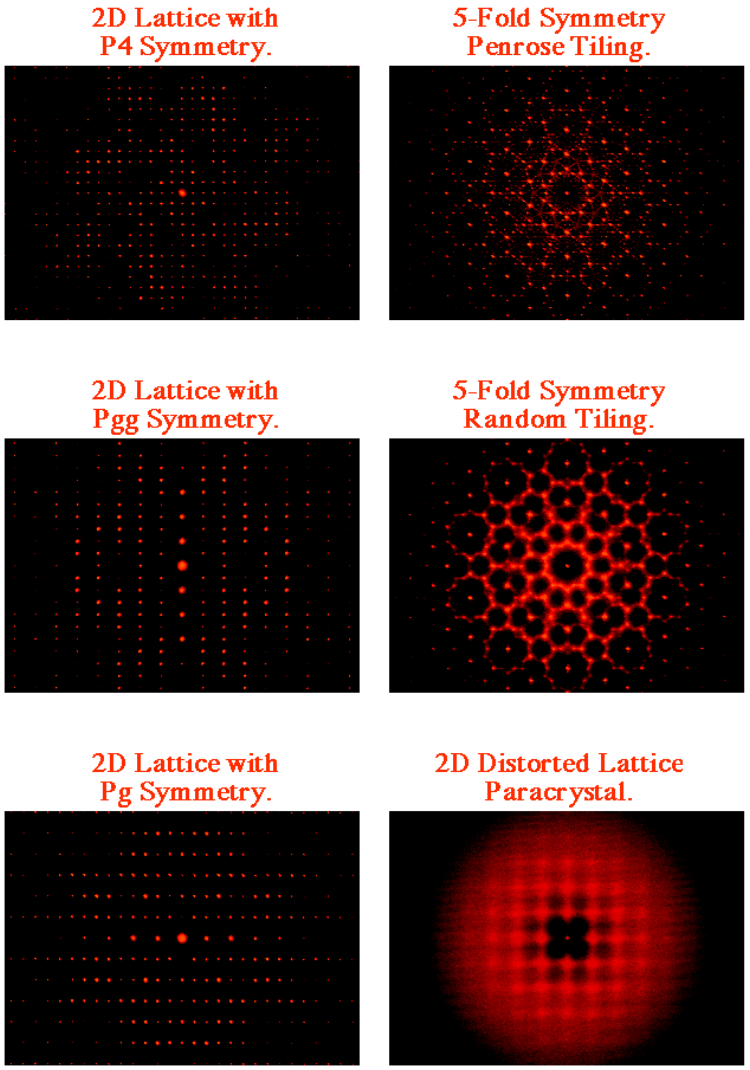
Class 13: More on quasicrystals and metallic glasses



Optical diffraction patterns of two-dimensional tilings. This is from the website of T. R. Wellberry in ANU. http://rsc.anu.edu.au/~welberry/Optical_transform/

Mackay in 1981 showed that a Penrose tiling showed sharp Bragg peaks in its optical transform (laser diffraction pattern).

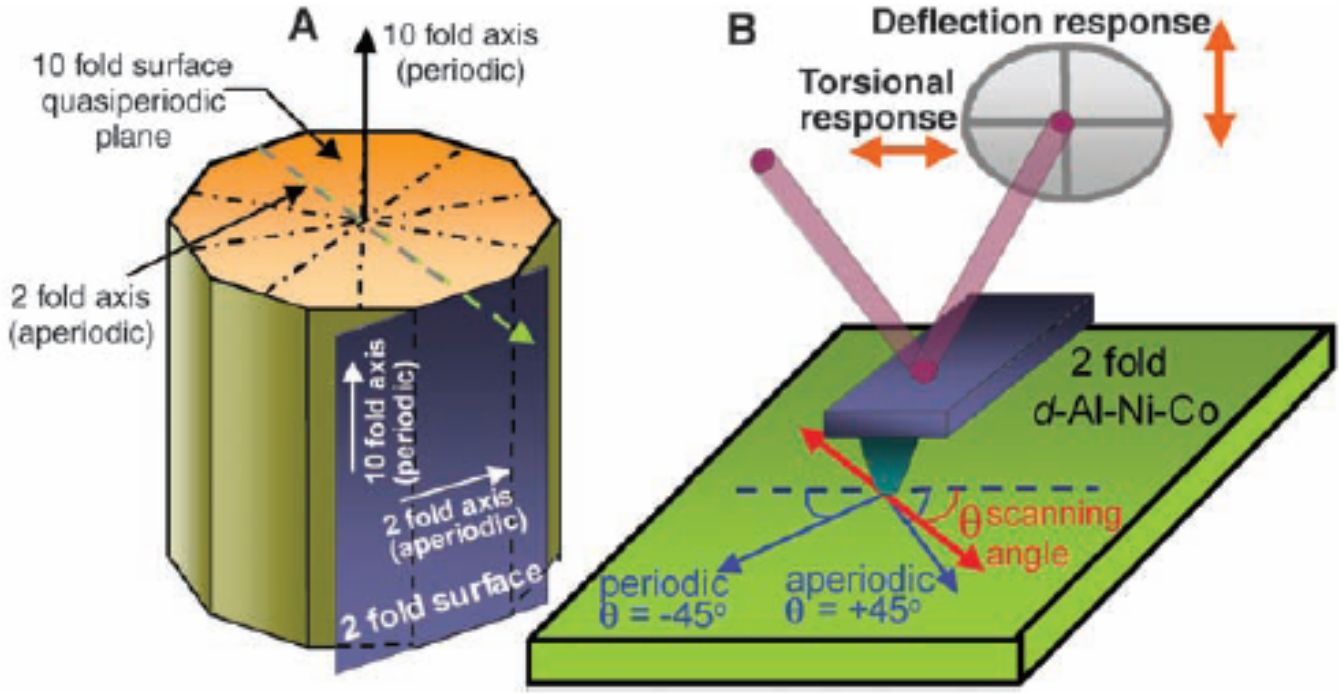
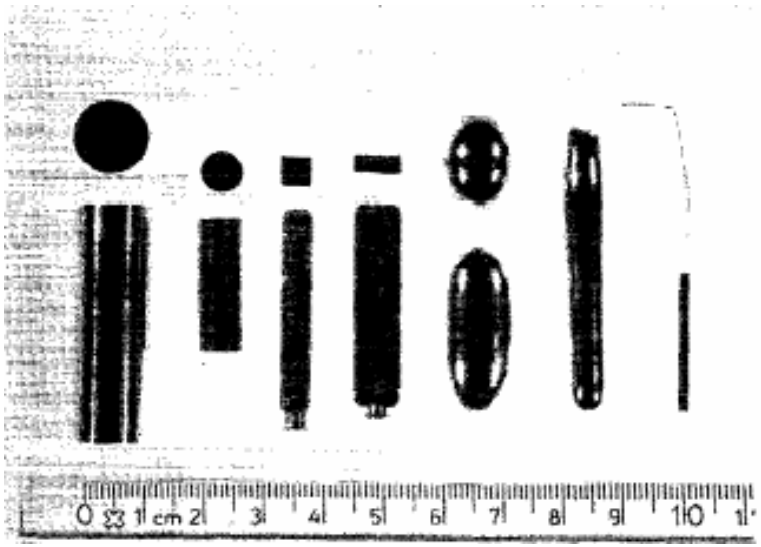


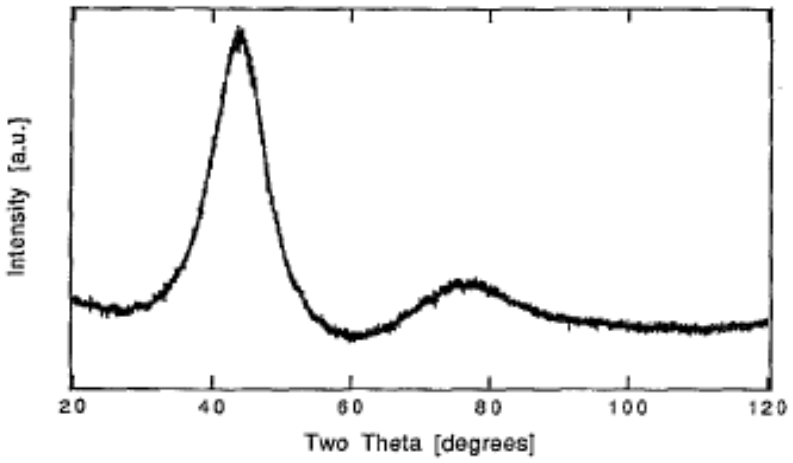
Fig. 1. (A) Schematic model of a decagonal Al-Ni-Co quasicrystal, showing the orientation of decagonal and twofold planes. The 2-fold plane is periodic along the 10-fold direction and aperiodic along the 2-fold direction. (B) Schematic of the cantilever and the scanning geometry during friction studies.

High Frictional Anisotropy of Periodic and Aperiodic Directions on a Quasicrystal Surface, J. Y. Park, D. F. Ogletree, M. Salmeron, R. A. Ribeiro, P. C. Canfield, C. J. Jenks, P. A. Thiel, Science 309 (2005) 1354 - 1356.



A highly processable metallic glass: $Zr_{41.2}Ti_{13.8}Cu_{12.5}Ni_{10.0}Be_{22.5}$, A. Peker and W. L. Johnson, *Appl. Phys. Lett.* **63** (1993) 2343.

Cooling rates are 10 K/s or less.



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