Edge dislocation

Figure by MIT OpenCourseWare.

Image source: Callister, W. D., *Materials Science and Engineering: An Introduction*
Screw dislocation

Literally looks like the threads of a screw or a spiral parking garage.

Figure by MIT OpenCourseWare.
How do we view dislocations?

**Etch pitting:** Add corrosive chemicals that preferentially target the defect region

**Other approaches:** Silver decoration (ionic crystals), transmission electron microscopy, X-ray diffraction

Images removed due to copyright restrictions. Please see: Fig. 2.1 in Hull, Derek, and Bacon, D. J. *Introduction to Dislocations*. Boston, MA: Butterworth-Heinemann, 2001.
How do we view dislocations?

2. Dislocation decoration:
Heat treat to move impurity atoms to defect sites, then etch to reveal location of impurities (e.g., Ag+).

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3. Transmission electron microscopy diffraction

4. X-ray diffraction

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5. Field ion microscopy diffraction