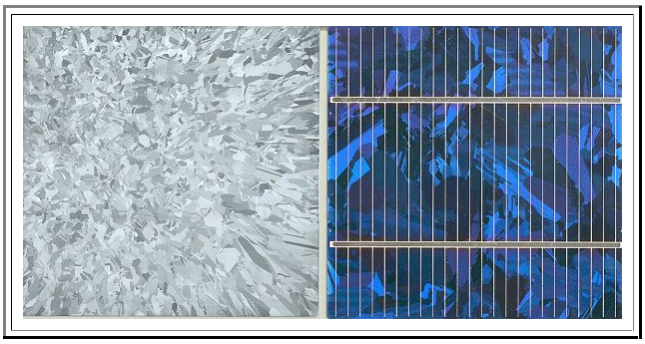
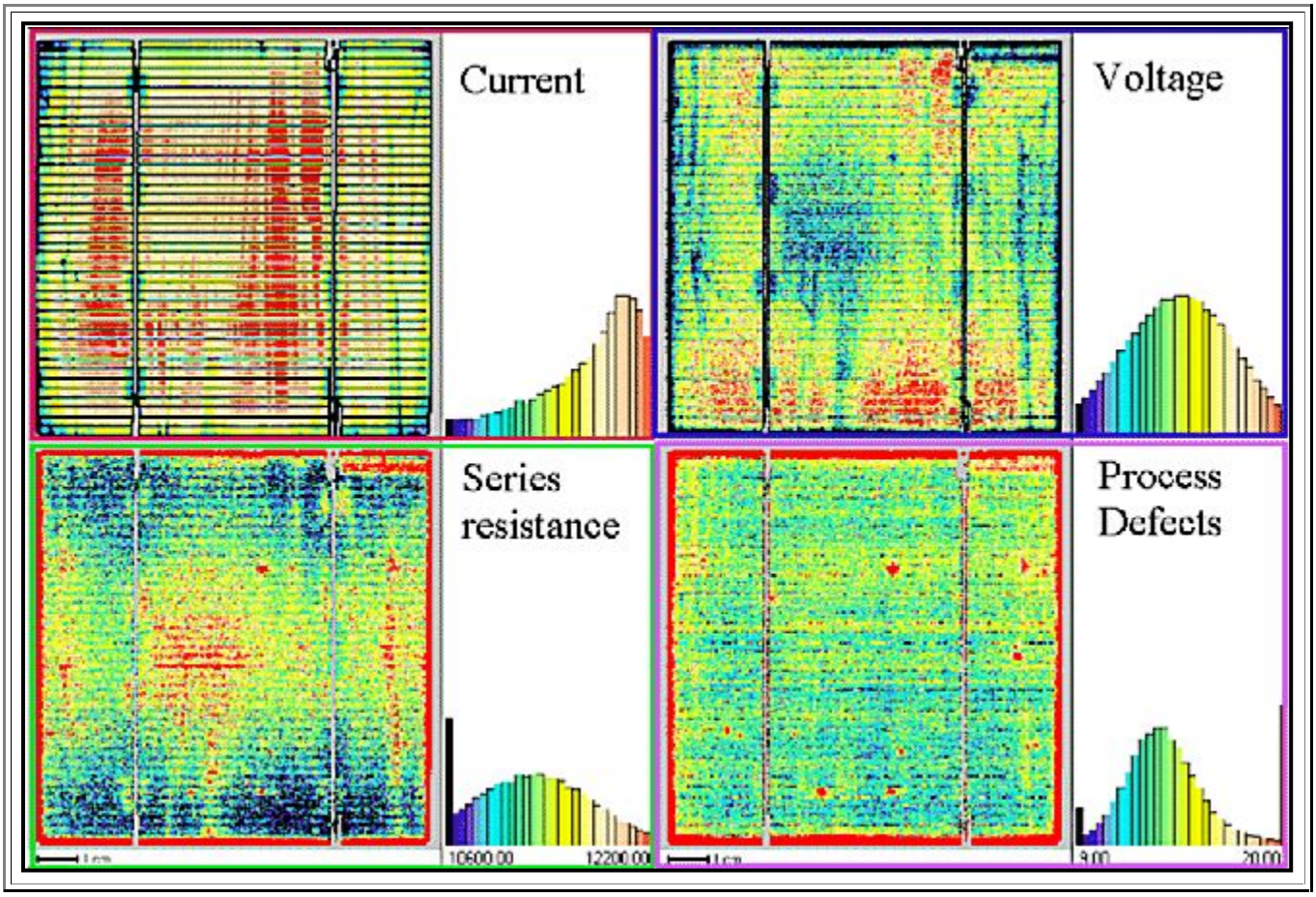
Solar Cells From Polycrystalline Cast Si

Illustration

- Here is a typical **poly-Si** slice and a solar cell made from a similar slice. The dimensions are **10 cm x 10 cm**.
  - While the **poly-Si** slice is relatively fine grained (probably form about **1993**), the solar cell (from about **1998**) shows coarser grain structures - demonstrating the progress made in casting technology



  - How good are polycrystalline solar cells? Not too bad, actually, but not as good as solar cells from very good single crystals.
- Below are four color coded maps showing essential parameters lod solar cells *locally* . These maps are not easy to obtains; they result from a new technique, developed by a university of Kiel research group, called "**CELLO**" (short for "*Cell Local*"). More details via the link. The parameters measured are:
  - "*Current*", meaning the maximum (short-circuit current) that can be drawn from a pixel.
  - "*Voltage*", meaning the voltage a pixel would produce if it would be an isolated cell by itself.
  - "*Series resistance* ", essentially meaning the ohmic resistance that would be found in an equivalent circuit for one pixel
  - "*Process defects*", a lumped parameter that displays serious local problems like, e.g., locally leaking **pn**-junctions.



The progress made with multi-crystalline **Si** solar cells in comparison to competition is shown in the picture below