## 2.2.2 Other Uses of Silicon

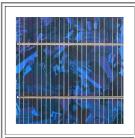
## **The Obvious**

As a budding Materials Scientist and Engineer, you must have heard or read about at least two other major **Si** products. If not, do the following: i) Start reading a real newspaper and ii) Read the Science and Technology part. What you definitely should be able to come up with are.

## Solar Cells.

- What do you know about solar cells? Quite a bit, actually provided you remembered what you have <u>learned already</u>.
- Let's recapitulate a few essentials you should know:

  - The energy density given by the sun and how much power we can generate
    at high noon per m<sup>2</sup>.
  - The fact that we need a (pn-) junction to collect minority carriers.
  - The fact that the diffusion length L plays a major role, and that this has to do with Si being an indirect semiconductor
  - The *I-U* characteristics and how it is calculated.
  - That the only decisive parameter in the solar cell business is money.
- "MEMS", i.e. microelectronic and micro-mechanic (and micro-optics and micro-fluidic and...) systems.
  - What do you know about MEMS? Probably not all that much from what you have learned so far.
  - Class Exercise: What do you know about MEMS?
  - To get some idea of what is going on in your immediate neighborhood in Itzehoe, <u>check this link!</u>
- We will come to these devices or components in due course. Meanwhile you can activate the link and look ahead a bit.
- Now ask yourself: Class Exercise: Are there any other uses of Si you know off (or can find quickly)?
  - Only after you pondered the questions above for some time, you should activate this link



Solar Cell



MEMS device Courtesy of Sandia National Laboratories, SUMMITTM Technologies, "www.mems.sandia.gov"