

Overview on Photovoltaics

Roger Clark, BP Solar

The demand for energy is an ever-increasing function as the world is made smaller by the introduction of low-cost communication technologies and the desire to bring the population of the Earth into a global culture. Access to energy and its importance for a society becomes more apparent as the sources for traditional energy are leveling off and more difficult to extract. The combination of these conditions is now driving the production and development of an energy source that is universally accessible to anyone who can look skyward, this is photovoltaics.

Photovoltaics are available in many forms today, from postage-stamp-sized screen-printable CdS and a-Si cells that power small consumer electronics, to systems of tens of megawatts assembled from fields of crystalline silicon, CdTe, CuInSe₂, or a-Si solar panels. While the best performance from each material set is on the forefront of their respective technologies, the biggest problems to solve are not what to make or what material to use, but how to make it in quantity quickly enough that photovoltaics could displace the latent energy demand of fixed-base users while offsetting the consumption of fossil fuels and avoiding the proliferation of nuclear technologies for power generation.