

Photovoltaics: Novel Technologies. Reliability

Titu-Marius I. BĂJENESCU

C.F.C., La Conversion, Switzerland
tmbajenesco@bluewin.ch

Abstract

In recent years the photovoltaics (PV) market has been growing at a rapid pace due to various factors related to the environment and economy. Three novel PV technologies (inorganic materials, organic materials, and crosscutting science and hybrid materials) appeared. Recent breakthroughs indicate that useful phenomena, such as carrier multiplication, can occur efficiently in certain nano-structured materials, offering an opportunity to enhance the efficiency of photovoltaic devices. This paper analyses these new technologies as well as some of the related reliability aspects.

Keywords: Solar cells, novel PV technologies, amorphous hydrogenated silicon (a-Si:H) thin film, reliability, GaInP/GaAs, GaInP/GaAs/Ge, Cu(InGa)Se₂ and CdTe cell efficiencies.

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