

A Message by the Guest Editors

This special issue of the *Journal of Solar Energy Engineering* is dedicated to photovoltaics. Presently, with approximately 5 GW of installed capacity, PV contributes only 0.15% to the world's energy production, due mainly to its high cost, e.g., 0.35 €/kWh in the Spanish climate. The contributions of this special issue deal with various technological aspects of PV whose ultimate goal is to lower the overall cost to the range 0.10–0.25 €/kWh by the year 2020.

In this issue, the reader will find the description of new technologies aimed at making efficient use of solar radiation at a fundamental level. For example, multijunction solar cells combined with high concentration systems promise efficiencies above 40% in Europe (see contributions by Baur et al., Algora et al., and Voltz et al.). Shifting the solar spectrum to match the cell bandgap is another approach pursued by the application of luminescent dyes and flat concentrators (see contributions by Sloof et al. and Kinderman et al.). Thermophotovoltaics, in which the solar spectrum is converted into that of a blackbody at about 2000 K, are being optimized by maximizing radiation capture and minimizing reradiation losses (see the contributions of Martín et al., Khvostikov et al., Andreev et al., Luca et al., and Astle et al.). In contrast, inter-

mediate band solar cells employ materials that exhibit an electronic band in between the otherwise conventional semiconductor band gap, allowing the absorption of otherwise wasted photons (see contributions of Palacios et al. and López et al.). Space applications are also present in the paper by F. Calderón and co-workers, in which the performance of high efficiency multijunction solar cells are analyzed in mobile robot applications. Advances in thin film module manufacturing and solar cell processing are described in the papers by Enzenroth et al. and Kulkarni et al. The paper by Sabry and Ghitas discusses different fitting procedures to the series resistance of solar cells.

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