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Solar Energy South Africa

Solar power generation science lecture

Overview

What is a solar energy book?

It covers the topics that are treated in the three lec-tures on photovoltaics (PV) that are taught at the Delft University of Technology throughout the Academic Year: PV Basics, PV Technology, and PV Systems. In addition the book also covers other forms of solar en-ergy, in particular Solar Thermal applications and Solar Fuels.

What topics are covered in a photovoltaic lecture?

Lectures cover commercial and emerging photovoltaic technologies and cross-cutting themes, including conversion efficiencies, loss mechanisms, characterization, manufacturing, systems, reliability, life-cycle analysis. Fundamentals of photoelectric conversion: charge excitation, conduction, separation, and collection.

How many technologies exist to convert solar radiant energy?

Several hundreds of technologies exist to convert solar radiant energy into other usable forms that perform work for humanity. Please see lecture video for example images of each type of solar panel. To make sense of this technology space, and to produce meaningful technology assessments and projections, a technology framework is helpful.

How do solar power plants work?

Raj Vachhani's document discusses solar power plants. It describes two main methods of solar power generation: photovoltaic and concentrated solar power. Photovoltaic uses solar cells to convert sunlight directly into electricity, while concentrated solar power uses mirrors to focus sunlight and heat a liquid to create steam to power turbines.

How do I conclude the book on solar energy?

The book is concluded with an Appendix, where some derivations that are too

lengthy for the book are shown. As this book is on Solar Energy, it is good to start the discussion with some general thoughts on Energy. We will begin with a quote from The Feynman Lectures on Physics.

What are some good books about solar energy?

GeoModel Solar s.r.o., (2014), . E. A. de la Breteque, Solar Energy 83, 1425 (2009). P. Trinuruk, C. Sorapipatana, and D. Chenvidhya, Renew-able Energy 34, 2515 (2009). , Tech. Rep. (Sandia National Laborator-ies, 1987). A. Jones and C. Underwood, Solar Energy 70, 349 (2001).

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