

5th Course on Materials for Energy and Sustainability (MRS and E-MRS) and 3rd Course of the EPS SIF International School on Energy (LNES 2016)

EPJ Web of Conferences Volume 148 (2017)

Erice, Italy
13 - 19 July 2016

Editors:

**Antonio Terrasi
David Cahen
Luisa Cifarelli**

**David S. Ginley
Abdelilah Slaoui
Friedrich Wagner**

ISBN: 978-1-5108-4514-5

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

This work is licensed under a Creative Commons Attribution license:
<http://creativecommons.org/licenses/by/2.0/>

You are free to:

Share – copy and redistribute the material in any medium or format.

Adapt – remix, transform, and build upon the material for any purpose, even commercial.

The licensor cannot revoke these freedoms as long as you follow the license terms.

Under the following terms:

You must give appropriate credit, provide a link to the license, and indicate if changes were made.

You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use. The copyright is retained by the corresponding authors.

Printed by Curran Associates, Inc. (2017)

For additional information, please contact EDP Sciences – Web of Conferences
at the address below.

EDP Sciences – Web of Conferences
17, Avenue du Hoggar
Parc d'Activité de Courtabœuf
BP 112
F-91944 Les Ulis Cedex A
France

Phone: +33 (0) 1 69 18 75 75

Fax: +33 (0) 1 69 28 84 91

contact-edps@webofconferences.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

THE GLOBAL CARBON NATION: STATUS OF CO₂ CAPTURE, STORAGE AND UTILIZATION	1
<i>Kocs Elizabeth A.</i>	
MATERIALS, CRITICAL MATERIALS AND CLEAN-ENERGY TECHNOLOGIES	17
<i>Eggert R.</i>	
ENERGY IN BUILDINGS: EFFICIENCY, RENEWABLES AND STORAGE	30
<i>Koebel Matthias M.</i>	
POWER SYSTEM AND MARKET INTEGRATION OF RENEWABLE ELECTRICITY	42
<i>Erdmann Georg</i>	
THE ROAD TO SUSTAINABLE TRANSPORTATION	62
<i>Hermans Jo</i>	
INORGANIC MATERIALS FOR PHOTOVOLTAICS: STATUS AND FUTURES CHALLENGES	74
<i>Slaoui A.</i>	
CONCENTRATING SOLAR POWER SYSTEMS	92
<i>Pitz-Paal R.</i>	
CONCENTRATED SOLAR POWER: COMPONENTS AND MATERIALS	111
<i>Kribus A.</i>	
THERMOELECTRICITY FOR FUTURE SUSTAINABLE ENERGY TECHNOLOGIES	122
<i>Weidenkaff Anke</i>	
INTRODUCTION TO WIND ENERGY SYSTEMS	133
<i>Wagner H.-J.</i>	
GEOHERMAL ENERGY	149
<i>Manzella A.</i>	
FUEL CELLS FOR ELECTROCHEMICAL ENERGY CONVERSION	175
<i>O'Hayre Ryan P.</i>	
THERMAL ENERGY STORAGE FOR CSP (CONCENTRATING SOLAR POWER)	191
<i>Py Xavier, Sadiki Najim, Olives Régis, Goetz Vincent, Falcoz Quentin</i>	
CHEMICAL ENERGY STORAGE: PART OF A SYSTEMIC SOLUTION	215
<i>Schlögl Robert</i>	
Author Index	