Nonimaging Optics: Efficient Design for Illumination and Solar Concentration XV

Roland Winston
Eli Yablonovitch
Editors

19–20 August 2018
San Diego, California, United States

Sponsored and Published by
SPIE
## Contents

### v Authors

### vii Conference Committee

## SOLAR APPLICATIONS I

<table>
<thead>
<tr>
<th>Paper ID</th>
<th>Title</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>10758 04</td>
<td>Efficient geometry of flexible solar panels optimized for the latitude of New York City</td>
<td>[10758-3]</td>
</tr>
<tr>
<td>10758 05</td>
<td>Solar tracking using beam-steering lens arrays</td>
<td>[10758-4]</td>
</tr>
<tr>
<td>10758 06</td>
<td>Two-stage 50X hybrid spectrum splitting CSP/CPV collector with InGaP/GaAs solar cells</td>
<td>[10758-5]</td>
</tr>
</tbody>
</table>

## SOLAR APPLICATIONS II

<table>
<thead>
<tr>
<th>Paper ID</th>
<th>Title</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>10758 07</td>
<td>Feasibility study on a novel daylighting system with embedded micro compound parabolic concentrators (CPCs)</td>
<td>[10758-6]</td>
</tr>
<tr>
<td>10758 08</td>
<td>Ray tracing and heat transfer simulation of novel glass-covered XCPC collector</td>
<td>[10758-7]</td>
</tr>
<tr>
<td>10758 09</td>
<td>Increased power collection efficiency of conventional silicon photovoltaic modules with holographic light management techniques</td>
<td>[10758-8]</td>
</tr>
</tbody>
</table>

## ILLUMINATION

<table>
<thead>
<tr>
<th>Paper ID</th>
<th>Title</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>10758 0A</td>
<td>High power modular LED-based illumination system for lithography applications</td>
<td>[10758-11]</td>
</tr>
<tr>
<td>10758 0B</td>
<td>Nonimaging optics applications in theater lighting</td>
<td>[10758-14]</td>
</tr>
</tbody>
</table>

## ADVANCED TOPIC I

<table>
<thead>
<tr>
<th>Paper ID</th>
<th>Title</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>10758 0E</td>
<td>Diffusive light scattering and collection for advanced device applications</td>
<td>[10758-17]</td>
</tr>
<tr>
<td>10758 0F</td>
<td>Optical simulation-based on flowline method</td>
<td>[10758-27]</td>
</tr>
</tbody>
</table>
THERMODYNAMIC APPLICATION

Ultra-high luminescence efficiency as a technology enabler: solar cells, thermophotovoltaics, and optoelectronic refrigerators (Invited Paper) [10758-18]

Spectral selectivity or nonimaging optics: Which to use for radiative cooling? [10758-19]

Prospects for broadband spectrum Raman optical refrigeration [10758-20]

Flowline analysis of étendue transfer of a wide-angle solar concentrator [10758-21]

Computational optimization for nonimaging solar concentrators using generalized pattern search [10758-28]

ADVANCED TOPIC II

Vis-NIR spectral flatness improvement for Laser-Driven Light Sources (LDLS) [10758-24]

Holographic cap collectors for enhanced mid-day energy production of vertically mounted bifacial photovoltaic modules [10758-26]
Authors

Numbers in the index correspond to the last two digits of the seven-digit citation identifier (CID) article numbering system used in Proceedings of SPIE. The first five digits reflect the volume number. Base 36 numbering is employed for the last two digits and indicates the order of articles within the volume. Numbers start with 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B...0Z, followed by 10-1Z, 20-2Z, etc.

Abbasi, Hamid, 06
Aksnes, Astrid, 05
Alvine, Claire, 0E, 0J
Apostoleris, Harry, 0I
Ayala Pelaez, Silvana, 09, 0P
Bernasconi, Johana, 0A
Besen, M., 0N
Bhusal, Yogesh, 08
Brinkley, Jordyn, OK
Chiesa, Matteo, 0I
Chrysler, Benjamin, 09, 0P
Culler, A., 0N
Cygan, David, 06
Enriquez-Torres, Delfino, 04
Ferry, Jonathan, 06, 0B
Flasck, Richard, 08
Fortmann, C. M., 0E, 0J
Garcia-Botella, Angel, 0F
Gong, Jing, 07
Groccia, Marcel, 0A
Hassanzadeh, Ali, 08
Hassebo, Yasser, 04
Herzig, Hans Peter, 0A
Hoffman, C., 0L
Ilan, B., 0L
Imperial, Zacarias, 0E, 0J
Jiang, Lun, 06, 0F, 0K
Johnsen, Håkon J. D., 05
Kadel, Rupak, 04
Kirk, Alexander, 06
Kinner, Raoul, 0A
Kostro, André, 07
Kostuk, Raymond K., 09, 0P
Marciniak, Małgorzata, 04
Michalakis, Emmanuel, 04
Noell, Wilfried, 0A
Oliker, Vladimir, 0G
Osowski, Mark, 06
Prajapati, Nikesh, 04
Rinland, C., 0L
Rosai, Kimberly, 0E, 0J
Sadoqi, Mostafa, 0E, 0J
Scartezzini, Jean-Louis, 07
Scharf, Toralf, 0A
Schüler, Andreas, 07
Tan, Sam X., 0P
Torgersen, Jan, 05
Tyo, Rachel, 0E, 0J
Vorbach, Reid, 0J
Widyolar, Bennett, 06, 0K
Winston, Roland, 06, 08, 0B, 0F, 0K
Wu, Yuechen, 09, 0P
Xiao, T. Patrick, 0H
Yablonovitch, Eli, 0H
Ye, X., 0N
Zhao, Jianbo, 09, 0P
Zhu, H., 0N
Conference Committee

Program Track Chair

Peter Bermel, Purdue University (United States)

Conference Chairs

Roland Winston, University of California, Merced (United States)
Eli Yablonovitch, University of California, Berkeley (United States)

Conference Program Committee

Pablo Benítez, CeDInt-UPM (Spain) and Light Prescriptions Innovators LLC (United States)
William J. Cassarly, Synopsys, Inc. (United States)
Daniel Feuermann, Ben-Gurion University of the Negev (Israel)
Michael W. Haney, ARPA-E (United States)
Sarah R. Kurtz, University of California, Merced (United States)
Juan Carlos Miñano, CeDInt-UPM (Spain) and Light Prescriptions Innovators LLC (United States)
Narkis E. Shatz, SureFire, LLC (United States)

Session Chairs

1 Solar Applications I
   Lun Jiang, University of California, Merced (United States)

2 Solar Applications II
   Lun Jiang, University of California, Merced (United States)

3 Illumination
   Bennett K. Widyolar, University of California, Merced (United States)

4 Advanced Topic I
   Harry N. Apostoleris, Khalifa University (United Arab Emirates)

5 Thermodynamic Application
   Marco Stefancich, Dubai Electricity and Water Authority (United Arab Emirates)

6 Advanced Topic II
   Tianyao P. Xiao, University of California, Berkeley (United States)