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# ***Nonimaging Optics and Efficient Illumination Systems IV***

**Roland Winston  
R. John Koschel**  
*Editors*

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## Introduction

Nonimaging Optics and Efficient Illumination Systems was held for the fourth time at SPIE's Optics and Photonics meeting. Previous to that, there were two conferences: Nonimaging Optics: Maximum Efficiency Light Transfer, chaired since its inception by Roland Winston, and Design of Efficient Illumination Systems, chaired by John Koshel. The combined conference continues to expand the technical content, while also providing an excellent framework for interaction between the analogous but separated communities of nonimaging optics and illumination. Based upon the excitement and packed meeting room, the fifth iteration in 2008 is expected to continue its growth.

There were four oral sessions and one poster session for this two-day conference. The primary focus topics of this year's meeting were light sources and solar/energy applications. Prior to the beginning of the first session, conference chair John Koshel gave an overview of the field of nonimaging/illumination optics in a paper entitled "Why Illumination Engineering?" This paper gave some size metrics (in revenue) of various applications, a brief history, and some insight into what are the hot topics in the field of illumination. After that, the primary focus of the conference started with a session entitled Solar and Energy Applications. John Davenport of Energy Focus led off with an invited paper (see paper 667003) about the opportunities of fiber optics in the field of illumination. The next session was Theory and Design, presided over by conference chair Roland Winston. The first afternoon session was Sources: Characterization, Mixing, and Recycling. Within this session, an invited talk by R. P. van Gorkom from Philips Research Eindhoven (see paper 66700E) presented étendue conservation aspects of color mixing. In the final session for the Nonimaging Optics Conference, Design and Application, Teus Teukker from Philips Lighting B.V. presented a talk entitled "Efficient collimator design for extended light sources with the flux tube method." In the evening of the following day, four posters were presented as part of this conference.

Simply said, the field of illumination continues to expand at a fast pace. The vitality and range of topics in Nonimaging Optics and Efficient Illumination Systems make for an educational and engaging day. A large factor in a number of talks was étendue and what it means to the design process. Additionally, in the illumination technical event held on the same night as the poster session, there were two talks that touched upon étendue. The first, by Christoph Hoelen from Philips, discussed spot lighting with LEDs. This talk showed the design limits and what can be accomplished with dichroics. The second presentation was completely about étendue – in fact that was its title. Oliver Dross of LPI gave this talk. Unfortunately, the illumination technical event is a more casual environment, and there are no proceedings papers for the presentations. However, it, along with the proceedings from the Nonimaging Optics Conference, point directly to

étendue being a prime, if not the largest, factor to the design and understanding of efficient illumination systems. Finally, LEDs, as evidenced by the trends, are the source of choice for studies in this field. The papers presenting results using other sources, such as arc lamps, are still evident but their number is decreasing. These other sources present different challenges, while providing a wealth of insight on how to proceed with solid-state sources.

We thank those who helped put together this conference, especially the authors, audience, SPIE staff, and program committee. The authors are the ones who provided the material to make the conference a success on its own. As alluded to above, the audience built on this success by asking many engaging questions. The SPIE staff ensured that everything ran smoothly before, during, and after the meeting. The program committee provided excellent assistance to ensure the quality of the content while also presiding over a number of the sessions. It was composed of Pablo Benítez, William Cassarly, Philip Gleckman, Jeffrey Gordon, Anurag Gupta, Douglas Kirkpatrick, Kenneth Li, Juan Carlos Miñano, Holger Moench, Narkis Shatz, and John Van Derlofske. Finally, thanks goes to Lambda Research Corporation for providing support to this conference. Their sponsorship provided travel support to those in need of it.

Next year we will return for the fifth iteration of this conference. Roland Winston and John Koshel will remain as chairs for one more year, but then in 2009 at least one of them will be replaced. This chair turnover format will ensure continuity from year to year while also bringing new insight into the conference. The planning for Nonimaging Optics and Efficient Illumination Systems V in 2008 is already underway, so please start planning submissions and attendance. The tentative focus areas are étendue, especially coherent aspects, light sources, and materials, especially plastics. If you would like to assist with the 2008 or later conference please contact one of us. We look forward to seeing you 2008.

**Roland Winston**  
**R. John Koshel**