

Optical materials and nanomaterials for nonlinear optics applications

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Technical Abstract

This presentation will focus on the use of optical and nanomaterials for nonlinear optical applications. Two examples will be discussed, (1) the use of nanocarbon and Carbon nanotubes as saturable absorbers in short pulse fiber lasers, and (2) the use of nanomaterials such as C₆₀ as well as gold nanoparticles as sensitizers in photorefractive (PR) polymer for updateable 3D holographic display. As part of example 1, a new platform for investigation of nonlinear liquids in liquid core optical fibers (LCOF) will be described and its applications in generation of new frequencies by Raman processes in CS₂-filled LCOF will be covered [1]. In the second example, large area PR polymer 3D displays for telepresence application will be summarized [2].

[1] K. Kieu, y. Merzlyak, L. Schneebeli, J. Hales, J. Perry, R. Norwood and N. Peyghambarian, Postdeadline paper, CLEO 2012, Baltimore, Maryland.

[2] P. A. Blanche, A. Bablumian, R. Voorakaranam, C. Christenson, W. Lin, T. Gu, D. Flores, P. Wang, W-Y Hsieh, M. Kathaperumal, B. Rachwal, O.Siddiqui, J. Thomas, R. A. Norwood, Y. Yamamoto, and N. Peyghambarian, *Nature*, **468**, 80 (2010).

Biography

Nasser Peyghambarian is a Professor at the College of Optical Sciences and also at the Department of Materials Science & Engineering at the University of Arizona. He is the Chair of Photonics and Lasers and serves as Director of the NSF Center for Integrated Access Networks (CIAN). He is Chairman of the Board and Founder of NP Photonics, Inc and TIPD, LLC. He received his Ph.D. in solid-state physics from Indiana University in 1982, specializing in optical properties of semiconductors before joining the optics program at the University of Arizona. He is the recipient of the International Francqui Chair, Belgium 1998-1999. He is a Fellow of the Optical Society of America, the American Physical Society, Society of optical engineers, SPIE and the American Association for the Advancement of Science.

