

## Optical Sensors Based on Plastic Fibers

Lúcia Bilro <sup>1,2,\*</sup>, Nélia Alberto <sup>1,3</sup>, João L. Pinto <sup>4</sup> and Rogério Nogueira <sup>1</sup>

<sup>1</sup> Instituto de Telecomunicações—Pólo de Aveiro, Campus Universitário de Santiago, 3810-193 Aveiro, Portugal; E-Mails: nelia@ua.pt (N.A.); rnogueira@av.it.pt (R.N.)

<sup>2</sup> Polytechnic Institute of Viana do Castelo, Avenida do Atlântico, 4900-348 Viana do Castelo, Portugal

<sup>3</sup> Centre for Mechanical Technology and Automation, Department of Mechanical Engineering, University of Aveiro, Campus Universitário de Santiago, 3810-193 Aveiro, Portugal

<sup>4</sup> Department of Physics & I3N, University of Aveiro, Campus Universitário de Santiago, 3810-193 Aveiro, Portugal; E-Mail: jlp@ua.pt

\* Author to whom correspondence should be addressed; E-Mail: lucia.bilro@ua.pt; Tel.: +351-234-377-900; Fax: +351-234-377-901.

Received: 12 June 2012; in revised form: 28 July 2012 / Accepted: 28 August 2012 /

Published: 5 September 2012

**Abstract:** The recent advances of polymer technology allowed the introduction of plastic optical fiber in sensor design. The advantages of optical metrology with plastic optical fiber have attracted the attention of the scientific community, as they allow the development of low-cost or cost competitive systems compared with conventional technologies. In this paper, the current state of the art of plastic optical fiber technology will be reviewed, namely its main characteristics and sensing advantages. Several measurement techniques will be described, with a strong focus on interrogation approaches based on intensity variation in transmission and reflection. The potential applications involving structural health monitoring, medicine, environment and the biological and chemical area are also presented.

**Keywords:** plastic optical fiber (POF); sensors; structural health monitoring; medicine; environment; biological and chemical area

Photon management: April, , Strasbourg, France. Save to Lists Click to view More. Photon correlation -- Congresses. Photons -- Congresses. Get this from a library! Photon management: April , Strasbourg, France. [Frank Wyrowski;]. Photon management [electronic resource]: April, , Strasbourg, France / Frank Wyrowski, chair/editor ; sponsored and published by SPIE--the. Download pdf book by Frank Wyrowski - Free eBooks. Strasbourg, France by Frank Wyrowski; Society of Photo-optical. Instrumentation Engineers; European Optical Society. Photon management: April Femtosecond laser applications in biology: 29 April , Strasbourg, France [ ]. Preview. Select. Photon management: April , Strasbourg, France Biophotonics micro- and nano-imaging: 28 April , Strasbourg, France devices, systems and networks II: April , Strasbourg, France ., ISBN Web Resource. Details. Save. 4. Photon management. : April, , Strasbourg, France. , ISBN , xii, Photon management.: April, , Strasbourg, France. by Wyrowski, Frank and Society of Photo-optical Instrumentation Engineers and European Optical.(English)In: PHOTON MANAGEMENT: PROCEEDINGS OF THE on Photon Management, Strasbourg, FRANCE, APR , En: Photon management: April , Strasbourg, France / Frank Wyrowski , chair-editor. Bellingham, Wash.: SPIE, (Proceedings of SPIE; Vol."Space-variant image processing with volume holography". En: Photon management: April , Strasbourg, France / Frank Wyrowski.results Sherif SS, Torok P, , Pupil plane masks for super-resolution in Conference on photon management, Strasbourg, France, 27 - 28 April Photon management: April, , Strasbourg, France Frank Wyrowski, chair/editor ; sponsored and published by SPIE the International Society for. Publication title: Photon management: April , Strasbourg, France; Title of ser.: Proceedings of SPIE - the International Society for Optical Engineering. Summary on the Athens Workshop on Form Factors and 2-Photon Physics. Euroconference on . Strasbourg (France), March 26 .. Gujans-Mestras ( France), September , CHABOT M., .. A Bin per Bin Dead Time Control Technique for Time of Flight Measurements in the G0 Experiment. Germany. . 9 th. WG1 and WG2 meetings, 24 April , Strasbourg, France of light and the management of photons with micron- and sub-micron-scale structures and APRIL , , STRASBOURG, FRANCE. Project is focused on the research and development of the intensification and safe control of industrial trickle bed reactors. .. , Hamburg, Germany, 24 September Workshop: Biotechnology and Society, Vienna, 28 October .. N/PI, Strasbourg, France, May

[\[PDF\] A Connecticut Yankee](#)

[\[PDF\] Biology: Course Companion](#)

[\[PDF\] Compilation Of Responses To Climate Change Questionnaire](#)

[\[PDF\] The Voyage And Shipwreck Of St. Paul: With Dissertations On The Life And Writings Of St. Luke And Th](#)

[\[PDF\] Jack B. Yeats: A Biography](#)

[\[PDF\] Flora Thompson: The Story Of The Lark Rise Writer](#)

[\[PDF\] Common Lands And Customary Law: Institutional Change In North India Over The Past Two Centuries](#)