

## 3<sup>rd</sup> International Conference and Exhibition on **Lasers, Optics & Photonics**

September 01-03, 2015 Valencia, Spain

### **Telluride glass fibers for mid-infrared sensing: From medical diagnosis to the detection of exo-planet**

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The glass-forming ability of chalcogens combinations has been known for several decades, but, compared to oxide glasses, especially silicates; this class of vitreous materials is just emerging in particular in order to shape optical fibers. The main attention paid to these materials relies on their large optical window extending in the mid-infrared giving access to molecular fundamental vibrational modes shifted far in the IR. This exceptional transparency, associated with suitable viscosity/temperature dependence is a favorable context to seize the opportunity to develop innovative optical fibers for mid-infrared sensing. Such fibers have been used in various frames with different final users in biology with INSERM, medical diagnosis with the Public City Hospital in Rennes, for CO<sub>2</sub> detection to strike against the global warming or for the Darwin mission of the European Space Agency (ESA). For each application, a special strategy is implemented in material science and optical fiber engineering. The talk will be devoted to the description of the last achievements in the field. A focus will be proposed on the new pure-telluride glasses which enable to expand the spectral working window further in the mid-IR until 20  $\mu\text{m}$ .

#### **Biography**

Bruno Bureau is a Professor, obtained his PhD on "Local order investigations in fluoride glasses by multinuclear solid state NMR" at the University of Maine in 1998. In 1999, he joined the Glass and Ceramic Laboratory at the University of Rennes for a position of Assistant Professor. He became full-Professor in 2006 and he has been the Co-Supervisor of 18 PhD. He is the Authors or Co-Authors of more than 140 papers and about 50 invited talks in the field of non-oxide glasses, infrared sensing, optical fibers, material and glass science, deposited patents, wrote 4 chapters of book. He received 5 awards, among which the Yvan Peychès award from the French Academy of Sciences in 2009. He co-founded the DIAFIR Company in 2011 and is now appointed to the "Institut Universitaire de France".

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