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First announcement

6th International Conference
Materials Science and Condensed Matter Physics

September 11-14, 2012, Chisinau, MOLDOVA

Organized by
Institute of Applied Physics (IAP)
Moldovan Physical Society (MPS)

Supported by
European Physical Society (ESP)

The Organizing Committee of the 6th International Conference on Materials Science and Condensed Matter Physics is pleased to invite you to participate to the 6th International Conference on Materials Science and Condensed Matter Physics (MSCMP 2012). MSCMP 2012, following conferences of 2001, 2004, 2006, and 2008, 2010 is organized by the Institute of Applied Physics, Moldova and Moldovan Physical Society and will be held in the Odiseu resort complex, (http://odiseu.md/) Vadul-lui-Voda town, in the suburb of Chisinau, on September 11-14, 2012.

It will be a forum for presentations of research findings and plans across wide areas of condensed matter physics and materials science. It will provide nice opportunity of discussion and dissemination of the latest results on selected topics of condensed matter physics and materials science. On the other hand, this will be an occasion for refreshing a broad perspective of scientific research and technological development for the participants through invited papers.

MSCMP 2012 program will include Plenary Lectures, Oral and Poster Presentations. In oral sessions authors should use PowerPoint presentations.

Conference working language: ENGLISH. No simultaneous translation is foreseen

April 30th, 2012 – Deadline for preliminary registration and abstract submission

May 31th, 2012 – Notification on acceptance of abstract

Topics and Conference Sections:

Materials and structure processing (MSP)

Nanotechnology, nanostructures and nanoelectronics (NNN)

Characterization, physical processes and properties (CPPP)

Condensed matter theory (CMT)

Solid-state device physics (SSDP)

Electro-physico-chemical methods of materials treatment (EMT)

All information about the Conference, on-line registration and Abstract submission is available at the Conference web site http://www.mscmp.phys.asm.md. Also you may contact us at mscmp2012@phys.asm.md.

CHALCOGENIDE SEMICONDUCTOR GLASSES FOR RADIATION-RESISTANT FIBER-BASED OPTICAL SENSORS

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Environment optoelectronic sensors based on optical fibers are known to be one of the most perspective sensing devices revealed a number of essential advantages over known counterparts, such as immunity to electromagnetic interference, lightweight, small size, high sensitivity, large bandwidth and ease in implementing multiplexed or distributed sensors, etc. Temperature, pressure and mechanical strains are most widely control parameters measured with fiber-based optical sensors (FBOS). But despite achieved progress in the last years, the development of high-reliable FBOS capable to work in the hazard radiation environment is an actual problem up to now. Mechanical stress measurements for structural integrity monitoring of reactor containment buildings, chemical control of nuclear waste tanks and radiation monitoring of geological waste disposals are only few examples of such industrial applications related to environmently-hazard extreme conditions.

The temperature T-monitoring within nuclear reactors is one of the most promising areas, where FBOS can be successfully used alternatively to conventional sensing devices such as Pt-resistance thermometers. This sensor contains a semiconductor crystal (T-sensitive functional element) like to GaAs coated with a dielectric mirror, the both elements being epoxyied to the fiber tip. The fiber made of pure silica glass is used as optical waveguard, the whole construction being protected and mechanically strengthened with Teflon tubing. The main operation principle of this T-measuring FBOS is grounded on a well-known negative temperature coefficient dependence of semiconductor bandgap: the measuring of fundamental optical absorption edge position yields the environment temperature.

However, this kind of T-measuring FBOS is hardly operated in the hazard radiation conditions because of accompanied radiation-induced structural damages hided the real value of pure T-related effect. Thus, in crystalline GaAs, the fundamental optical absorption edge depends on both radiation defects and ambient temperature in a too complicated manner to provide reliable T-measurements. This important problem can be successfully resolved by corresponding choice of T-sensitive functional semiconductor element possessing a great T-induced shift of fundamental optical absorption edge combined with relatively small or even negligible under-margin radiation sensitivity.

In this work we report on the possibility of application of chalcogenide semiconductor glasses of Ge-As-Se family as active media for T-measuring FBOS. Temperature and radiation-induced changes of optical transmission in the fundamental optical absorption edge region was studied. Quasi-linear temperature dependences of the optical characteristics were observed through the whole investigated range of temperatures (from the room temperature to the glass transition temperature). Additionally, negligible radiation-induced changes were recorded.