**Fibre Taper Coated with Zinc and Bismuth Chalcogenides thin Film Heterostructure**

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**Abstract:**

Optical fibre tapers coated with nanometre thick dielectric films having significantly higher refractive index as compared to the glass of the fibre core can function as highly sensitive fibre sensors in Bioengineering and Medicine. Their operating principle is based on the lossy mode resonance (LMR), which spectral position strongly depends on surrounding medium refractive index value. This happens due to a strong optical, electromagnetic field localizing in the coating film under the LMR conditions. In the case of tapers coated with bismuth or antimony chalcogenides another significant feature of field localizing in the coating film is associated with absorption saturation. The latter is an important property for the design of fibre lasers operating in the passively mode-locked regime. The aims of this study are to screen recent advances in the fabrication and investigation of thin film coated fibre tapers using metalorganic chemical vapour deposition. Zinc and bismuth chalcogenides thin film heterostructure is deposited along the lateral surface of tapered fibres with in situ recording of changes in fibre transmission spectra in the 1 -1.6 μm wavelength range. Dependences of the LMR on taper diameter and thickness of the coating film are addressed.

**Biography:**   
Professor Konstantin M. Golant, Doctor of Physics and Mathematics, Russian Federation State Prise laureate (2001) is a Principal Investigator at Kotel’nikov IRE RAS. Prior attending Kotel’nikov IRE RAS, he was a Head of Laboratory at the Fiber Optics Research Centre of Russian Academy of Sciences. He graduated from Moscow Institute for Physics and Technology, received his Ph.D. from Lebedev Physical Institute of USSR Academy of Sciences and DSc from the General Physics Institute of RAS. Professor Golant is an author and co-author of more than 200 articles in peer reviewed journals. His primary research interests are in the field of Material Science and Technology. Specifically, he is interested in plasma chemical glass synthesis, optical fibre technology, semiconductor physics, fiber lasers and sensors.