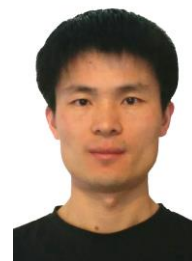


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Biography

Libo Ma received his B.Sc. degree in the Physics Department from the Shandong Normal University in 2001, and his Ph.D. degree from the Institute of Physics, Chinese Academy of Sciences in 2007. He is currently a group leader in the Institute for Integrative Nanosciences, Leibniz IFW Dresden. He has published more than 40 journal papers. His research interests cover mainly cavity photonics, photon-plasmon coupling, topological state of light and optofluidics.

Optical coupling in microtubular cavities for plasmonic and optofluidic applications

Microtubular cavities were fabricated by releasing prestrained nanomembranes via rolled-up nanotech, which naturally provide built-in microfluidic channels for optofluidic applications. In such structure, light can be confined and propagate along the rolled-up dielectric nanomembranes, allowing for efficient interactions with the surrounding media. By coating a noble metal layer onto the microtube surface, hybrid photon-plasmon modes were generated due to the coupling of resonant light and surface plasmons, which leads to an intense surface evanescent field for enhanced light-matter interactions. By trapping a microsphere into the fluidic channel of microtubes, a novel type of photonic molecule was fabricated for the study of resonant mode coupling and tuning. In addition, microtube cavities were monolithically integrated on photonic chips to demonstrate optofluidic functionality, which are well-suited for potential biological/chemical sensing and analysis in a lab-in-a-tube system. As a novel platform, our microtubular cavities imply promising applications for enhanced light-matter interactions, optical tuning, photonic chip integration, and optofluidics. These works were carried out with the efforts of Yin Yin, Jiawei Wang, Abbas Madani, Vladimir Bolaños, Stefan Harazim, Libo Ma, and Oliver G. Schmidt in Leibniz IFW Dresden.