RED PHOTONIC GLASSES AND CONFINED STRUCTURES

Alessandro Chiasera[a], Anna Lukowiak[b], Francesco Scotognella[c,d], Davor Ristic[e,f], Sreeramulu Valligatla[a,g,h], Andrea Chiappini[a], Alessandro Vaccari[i], Dominik Dorosz[j], StefanoTaccheo[k], Rogeria Rocha Gonçalves[l], Giancarlo C. Righini[m,n], Roberta Ramponi[c], Maurizio Ferrari[a,m]

[a]IFN - CNR CSMFO Lab. & FBK CMM, via alla Cascata 56/C Povo, 38123 Trento, Italy,
[b]Institute of Low Temperature and Structure Research, PAS, 2 Okolna St., 50-422 Wroclaw, Poland.
[c]Politecnico di Milano, Dipartimento di Fisica and IFN-CNR, Piazza Leonardo da Vinci 32, 20133 Milano, Italy.
[d]Center for Nano Science and Technology@PoliMi, Istituto Italiano di Tecnologia, Via Giovanni Pascoli, 70/3, 20133, Milan, Italy.
[e]Ruđer Bošković Institute, Division of Materials Physics, Laboratory for Molecular Physics, Bijenička c. 54, Zagreb, Croatia.
[f]Center of Excellence for Advanced Materials and Sensing Devices, Research unit New Functional Materials, Bijenička c. 54, Zagreb, Croatia.
[g]Dipartimento di Fisica, Università di Trento, via Sommarive 14, Povo, 38123 Trento, Italy.
[h]School of Physics, University of Hyderabad, Hyderabad 500046, India.
[i]FBK -CMM, ARES Unit, 38123 Trento, Italy.
[j]Bialystok University of Technology, Department of Power Engineering, Photonics and Lighting Technology, 45D Wiejska St., Bialystok 15-351, Poland.
[k]College of Engineering, Swansea University, Singleton Park, Swansea, UK.
[l]Departamento de Química, Universidade de São Paulo, Av. Bandeirantes, 3900, CEP 14040-901, Ribeirão Preto/SP, Brazil.
[m]Centro di Studi e Ricerche Enrico Fermi, P.zza Viminale 1, 00184 Roma, Italy
[n]IFAC - CNR, MiPLab, Via Madonna del Piano 10, 50019 Sesto Fiorentino, Italy.

Glass photonics is pervasive in a huge number of human activities and drive the research in the field of enabling technologies. Glass materials and photonic structures are the cornerstones of scientific and technological building in integrated optics. Photonic glasses, optical glass waveguides, planar light integrated circuits, waveguide gratings and arrays, functionalized waveguides, photonic crystal heterostructures, and hybrid microresonators are some examples of glass-based integrated optical devices that play a significant role in optical communication, sensing, biophotonics, processing, and computing. We present some recent results obtained by our consortium in rare earth doped photonic glasses and confined structures, in order to give some highlights regarding the state of art in glass photonics. To evidence the unique properties of transparent glass ceramics we will compare spectroscopic and structural properties between the parent glass and the glass ceramics. Starting from planar waveguides we will move to spherical microresonators, a very interesting class of photonic confined structures. Then we will present 1D-photonic crystals allowing management and manipulation of the spectroscopic properties of optical and spectroscopic properties. We will conclude the short review with some remarks about the perspective for glass photonics.

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