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“Edited by a true thought leader in the field, this volume gives an authoritative and up-to-date survey of both theory and applications of glass micro- and nanospheres. Topics include whispering-gallery micro-resonators, photonic crystals, core-shell structures, biomedical sensing, nonlinear optics, as well as microwave and millimeter-wave generation. It will be useful to both graduate students and practicing researchers in mesophotonics.”

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Prof. Safa Kasap
University of Saskatchewan, Canada

This book summarizes the recent research and development in the field of glass micro- and nanospheres. With special focus on the physics of spherical whispering-gallery mode resonators, it presents selected examples of application of glass microspheres in biosensing, laser devices, and microwave engineering. Hollow microspheres also offer a perspective for hydrogen transport and storage. On the other hand, glass nanospheres are fundamental for a class of photonic crystals (e.g., direct and inverse opals), as well as for industrial composite materials. Both micro- and nanospheres find important applications in biomedicine. The book highlights examples of preparation techniques and applications, addresses recent challenges, and examines potential solutions. It addresses physicists, chemists, materials scientists, and engineers, working with glass materials on microcavities, on nanotechnologies, and on their applications.



Giancarlo C. Righini is a physicist. He worked for almost 40 years at CNR, the National Research Council of Italy, in Florence and Rome, becoming research director of various organizations. After his retirement from CNR, he was director of the Enrico Fermi Centre in Rome (2012–2016). His interests concern optical holography, fiber and integrated optics, and glass materials. He has published over 500 papers and has been chair of several committees of international conferences. He was vice president of IUPAP and of ICO, cofounder and president of the Italian Society of Optics and Photonics (SIOF), secretary of EOS, and member of the board of directors of SPIE. He is chair of the Technical Committee on Glasses for Optoelectronics of the ICG, fellow of EOS, OSA, SIOF, and SPIE, and a meritorious member of SIF.



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