DESCRIPTION

The first in-depth treatment of the synthesis, processing, and characterization of nanomaterials using lasers, ranging from fundamentals to the latest research results, this handy reference is divided into two main sections. After introducing the concepts of lasers, nanomaterials, nanoarchitectures and laser-material interactions in the first three chapters, the book goes on to discuss the synthesis of various nanomaterials in vacuum, gas and liquids. The second half discusses various nanomaterial characterization techniques involving lasers, from Raman and photoluminescence spectroscopies to light dynamic scattering, laser spectroscopy and such unusual techniques as laser photo acoustic, fluorescence correlation spectroscopy, ultrafast dynamics and laser-induced thermal pulses.

The specialist authors adopt a practical approach throughout, with an emphasis on experiments, set-up, and results. Each chapter begins with an introduction and is uniform in covering the basic approaches, experimental setups, and dependencies of the particular method on different parameters, providing sufficient theory and modeling to understand the principles behind the techniques.
Dr. S. C. Singh is currently working as IRCSET, EMPOWER postdoctoral fellow in Prof. John Costello’s group at National Centre for Plasma Science and Technology, Dublin City University, Ireland on Development of extreme UV laser light using HHG through laser produced plasma at the nanostructured surfaces. His current research interest includes laser matter interaction, laser induced nanoparticle synthesis and modification, and materials for energy harvesting and storage.

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Dr. Chunlei Guo is Associate Professor at the Institute of Optics, University of Rochester, USA. He has chaired several optic and laser related committees and has published over 70 papers in refereed journals. Research interests encompass atoms/molecules in strong laser field, non-linear optics, laser surface nano/microstructuring, femtosecond lasers and optics and ultrafast dynamics in solids.

Prof. Weiping Cai is the Director of the Institute of Solid State Physics, CAS and Head of the Key Laboratory of Materials Physics. He has published over 100 papers in international peerreviewed journals such as Advanced Materials and has organized several international conferences. Current research interests include synthesis and properties of metal and semiconductor nanoparticles, 2D nanoparticle arrays and sensors.

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