



New Nonlinear Optical Materials: Theoretical Research

By Ji-Ping Huang, K. W. Yu

Nova Science Publishers Inc. Hardback. Book Condition: new. BRAND NEW, New Nonlinear Optical Materials: Theoretical Research, Ji-Ping Huang, K. W. Yu, Optical materials with large values of non-linear susceptibilities and fast responses are in great demand in industrial applications, such as non-linear optical switching devices for use in photonics and real-time coherent optical signal processors, optical limiters, and so on. In general, many applications of non-linear optics that have been demonstrated under controlled laboratory conditions could become practical for technological uses if such materials were available. It is usually believed that an effective enhanced non-linear optical response can appear in a composite material in which at least one component should possess an inherent non-linear optical response. Thus, the common way to develop new non-linear optical materials is to seek materials in which the components possess an inherently large non-linear optical response. In contrast, the author has theoretically exploited some new non-linear optical materials, e.g., colloidal nanocrystals with strong lattice effects, metallic films with inhomogeneous microstructures adjusted by ion doping or temperature gradient, composites of graded (and/or shape-anisotropic) nanoparticles, etc. The proposed materials are difficult or impossible to achieve with conventional, naturally occurring materials or random composites widely discussed in the literature....



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