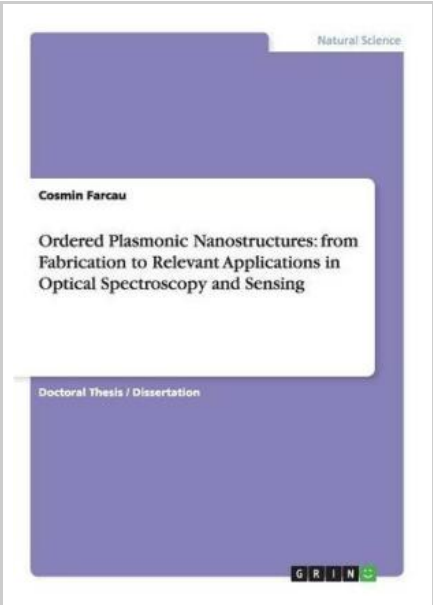

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Ordered Plasmonic Nanostructures: from Fabrication to Relevant Applications in Optical Spectroscopy and Sensing

By Cosmin Farcau

GRIN Verlag Gmbh Mrz 2015, 2015. Taschenbuch. Book Condition: Neu. 211x152x12 mm. Neuware - Doctoral Thesis / Dissertation from the year 2008 in the subject Physics - Optics, Babe -Bolyai Universit, language: English, comment: No grade was given after defense of the thesis, but the author earned the distinction 'Summa cum laude'., abstract: Ordered plasmonic nanostructures are currently the subject of numerous scientific studies, due to their potential applications, from optical communications to chemical analyses and biomedicine. This thesis is focused on a special type of periodically ordered two-dimensional (2D) metallo-dielectric structure, noble metal films over microsphere arrays: from their fabrication and characterization, to spectroscopic applications. Prepared structures exhibit remarkable optical properties (including an unusually high transmittance, resembling the extraordinary optical transmission phenomenon), resulting from the excitation of surface plasmons. It is demonstrated that these plasmo-photonic structures are very promising multifunctional active-substrates for Surface Enhanced Raman Scattering, Metal Enhanced Fluorescence, and Surface Plasmon Resonance Spectroscopy. Chapter 1 is devoted to giving an overview of the interesting aspects related to the optical properties and applications of periodically structured metals and dielectrics. We also briefly describe some of the currently developed nanofabrication techniques. A few concepts, like the photonic

Reviews

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