Index

"*Following the discovery of plasmonic enhancement, an interdisciplinary community dedicated a strong effort to apply this phenomenon to biochemical detection. The success was so relevant that now we can talk about theranostics in medicine, an approach crucially based on the plasmonic local field enhancement. This compendium will be a useful reference for students and researchers who want to enter this research area and utilize the advances and extend the knowledge to future applications in this fertile field.*"

Prof. Enzo Di Fabrizio
King Abdullah University of Science and Technology, Saudi Arabia

Plasmonic nanoparticles have been the subject of extensive research owing to their remarkable optical properties, known as localized surface plasmon (LSP). LSP is characterized by (i) a strong light absorption and scattering of the light depending on the geometrical parameters of nanoparticles and (ii) a strong amplification of the local field in the vicinity of nanoparticles. Quite recently, it was shown that the activation and the initiation of chemical reactions or physical processes can be facilitated using LSP excitation. Such exploitation presents two main advantages: an enhanced yield and a fine control of chemical reactions at the nanoscale. These topics have become very active and are in line with molecular plasmonics. This book explores this new field and provides a broad view on the exploitation of plasmonics in chemical and biological fields. In particular, it emphasizes that LSP excitation can be employed as a tool to promote and probe specific physical, chemical, or biological effects at the nanoscale.

Marc Lamy de la Chapelle is professor at Le Mans Université, France. His research activities concern plasmonics and surface-enhanced Raman scattering (SERS) and are focused on the fundamentals of these effects and their applications to biological issues (biomolecule detection, structural studies, biosensors, etc.), especially to the diagnosis of pathologies. He manages several research projects at national and international levels. He was also director of the CNRS National Research Network on Molecular Plasmonics and Enhanced Spectroscopies. Prof. Lamy de la Chapelle has authored more than 100 international publications (more than 5700 citations, h-index = 32) and 7 book chapters, has edited or coauthored 6 books, and holds 3 patents.

Nordin Felidj is professor at Université Paris Diderot, France, leader of the "Molecular Plasmonics" group, and vice-director of the CNRS National Research Network on Molecular Plasmonics and Enhanced Spectroscopies. His scientific research is related to plasmonics and SERS (mechanisms of the SERS effect, elaboration of hot-spot structures for single-molecule detection by SERS, optical studies of hybrid plasmonic structures, and plasmonics for chemistry). He manages several research projects at national and international levels. Prof. Felidj has authored more than 90 international publications and 6 book chapters and holds 1 patent.

V672
ISBN 978-981-4800-03-7
9 789814 800037

PAN STANFORD PUBLISHING
www.panstanford.com