Stevens Institute of Technology

Nanotechnology Graduate Program

Single Molecule and Nano Scale Probing Using Surface Enhanced Raman Scattering

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Burchard 118, Time 11am

Professor Katrin Kneipp

Harvard University Medical School, Wellman Center for Photomedicine
Harvard - MIT Division of Health Sciences and Technology

Raman scattering performed in local optical fields of silver and gold nanostructures results in an effect known as surface enhanced Raman scattering (SERS), which turns the very weak Raman effect into a single molecule and nanoscale spectroscopic probe. Moreover, high local optical fields provide opportunities for extension of Raman spectroscopy to two-photon excitation. The talk introduces SERS and discusses potential applications of this exciting phenomenon.

Professor Katrin Kneipp is affiliated with the Harvard University Medical School Wellman Center for Photomedicine and the Harvard - MIT Division of Health Sciences and Technology. Professor Kneipp completed her Diploma thesis and Ph. D. Thesis in physics from Friedrich-Schiller-University Jena. Her awards and recognitions include: Heisenberg Fellowship of the Deutsche Forschungsgemeinschaft DFG (1992-1995), the Meggers Award of the Society for Applied Spectroscopy (1999), and the Rockefeller-Mauze visiting chair at Massachusetts Institute of Technology 2000/2001. Professor Kneipp's research interests include: Ultrasensitive and nanoscale spectroscopy exploiting local optical fields of nanostructures; single molecule methodologies; surface-enhanced Raman scattering (SERS); spectroscopy of innovative nanomaterials; DNA characterization; linear and non-linear Raman spectroscopy; biomedical spectroscopy; and trace detection and analysis in medicine, pharmacy, and environmental analysis.

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