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Title:	Propagating surface plasmon resonances in two-dimensional patterned gold-grating templates and surface enhanced Raman scattering.
Authors:	Ramakrishna, S. Anantha (/jspui/browse?type=author&value=Ramakrishna%2C+S.+Anantha)
Keywords:	Cost effective Enhanced Raman scattering
Issue Date:	2012
Publisher:	American Institute of Physics
Citation:	Journal of Applied Physics, 112 (4), art. no. 044314.
Abstract:	Surface enhanced Raman scattering (SERS) from Raman active rhodamine-6G probe molecules is investigated on two-dimensional patterned gold-grating templates having submicron periodicity of 800 nm. Two-dimensional surface nano-patterning in the form of square, hexagonal, and rectangle has been obtained through cost effective laser interference lithography. We find a reproducible SERS enhancement of the order of 10^5 on these nano-patterned plasmonic templates, showing a slight superior result on hexagonal patterned templates. Strong localized near-fields due to surface plasmon resonance (SPR) lead to such an enhancement. We find evidence for good correlation in the SPR excitation and enhanced Raman scattering through experimental investigation by using different Raman pump excitation wavelengths of 785 nm, 633 nm, and 514 nm and different pump powers. The results are strongly supported by computer simulations of the electromagnetic fields at the pump wavelengths. Our results demonstrate that an optimized selection of the structure and pump excitation wavelength is necessary for good SERS signal.
Description:	Only IISERM authors are available in the record.
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