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Giant Electric Field Generation in Nano-Metallic Cylinder Chains Due to Plasmon Propagation ANGELA CAMACHO, JUAN CARLOS ARIAS, Universidad de los Andes — We present a study of the superficial plasmons propagation in a chain of nano-metalic cylinders by analyzing: size effect and coupling between the particles. Particularly, we focus on the main features of electric fields in the inter-cylinder regions due to their relationship with SERS(Surface-enhanced Raman Scattering). Giant electric fields have been observed in spherical nano-particles showing an enormous increasing of the cross section, which offers very interesting applications in molecular physics. We calculate the external radiation effect on chains of cylinders lateral and vertically coupled and examine the Plasmon formation in them. Specially, we study the Plasmon propagation depending on the particle size, the separation between them and the type of coupling. We find enhanced electric fields in the inter-particles regions showing the charge accumulation and border effects in cylinders, which are strongly dependent on the two above proposed parameters, and we also extend our results to possible Surface Enhanced Raman Scattering geometric effect to make a comparison with the spherical nano-particles.

Angela Camacho
Universidad de los Andes

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