Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Energy concentration in plasmonic nanostructures: Green function formalism[1] SAI KIT YUNG, CHEUNG WAI CHAU, KIN WAH YU, The Chinese University of Hong Kong — We have developed the Green function formalism (GFF), which can be used to study the field distribution and electrostatic resonance of different nanostructures. In the GFF, a surface integral equation is formulated for the scalar potential for an arbitrary number of nanostructures of various shapes. This formalism has the advantage of avoiding matching the complicated boundary conditions on the surfaces of the nanostructure. In particular, we have studied the cases of two approaching metal cylinders and non-touching metal crescent under a uniform applied electric field. It is shown that there is an energy concentration within the air narrow gap and the metal narrow gap in the cases of approaching cylinders and non-touching crescent respectively. The numerical GFF results are compared with the analytic results by conformal transformation. The results are useful in designing plasmonic light-havesting devices.

[1]Supported by the General Research Fund of the HKSAR Government.

Sai Kit Yung
The Chinese University of Hong Kong

Date submitted: 10 Nov 2011 Electronic form version 1.4