

Abstract Submitted
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Collective excitations in concentric metallic nanoshells SHYAMAL-
ENDU BOSE, EDWARD ZALE, Drexel University — Invention of nanoshells made
of a silica core coated with an ultra-thin metallic layer [1] has opened a floodgate of
many applications in medical and other fields. Most of these applications are trig-
gered by the fact that the nanoshells have unusual electronic and optical properties
which can be controlled by controlling the inner and outer radii of the nanoshell.
Employing a classical hydrodynamic model, we have obtained a general expression
for the resonant frequencies (plasmons) of the electrons for N concentric nanoshells.
Results obtained using this theory will be compared with previous calculations for
two concentric nanoshells [2] and possible applications of the new results will be
discussed. 1. S.J. Oldenburg, *et al.*, Chem. Phys. Letts. **288**, 243 (1998). 2. E.
Prodan, *et al.*, Science **302**, 419 (2003).

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