

Abstract Submitted  
for the MAR05 Meeting of  
The American Physical Society

**Optical Spectra and Excitonic Effect of Nanostructured Materials**<sup>1</sup> YOUNG-KYUN KWON, University of California, Berkeley and University of Minnesota, CATALIN D. SPATARU, University of California, Berkeley, and Lawrence Berkeley National Laboratory, JAMES R. CHELIKOWSKY, University of Minnesota, and University of Texas, Austin, MARVIN L. COHEN, University of California, Berkeley, and Lawrence Berkeley National Laboratory, STEVEN G. LOUIE, University of California, Berkeley, and Lawrence Berkeley National Laboratory — To investigate the optical spectra and excitonic effect of various nanostructured materials, we solve the Bethe-Salpeter equation (BSE) of the two-particle Green's function employing one-particle input from either GW approximation (GWA) calculations or the empirical pseudopotential method (EPM). We will present a comparative study of results from these two approaches. We will discuss the absorption spectra and excitonic effects of various structures of silicon and carbon materials including nanowires and nanotubes.

<sup>1</sup>This work is partly supported by ITAMIT, University of Minnesota.

Young-Kyun Kwon  
UC Berkeley

Date submitted: 29 Nov 2004

Electronic form version 1.4