2006 Vol.46 No.4 pp.727-730 DOI:

Theoretical Studies on Expressions of Condensed-Phase Photoionization Cross Section

MA Xiao-Guang, WANG Mei-Shan, WANG De-Hua, and QU Zhao-Jun

Department of Physics, Yantai Normal University, Yantai 264025, China
(Received: 2006-1-16; Revised: 2006-3-29)

Abstract: A set of general expressions for photoionization cross sections of atoms or molecules embedded in a medium and a dielectric influence function are derived based on Maxwell's equations and the Beer-Lambert's law in this work. The applications are performed for the photoionization process of solid gold both in the Clausius-Mossotti (virtual cavity) model and the Glauber-Lewenstein (real cavity) model firstly. The results show that the present theoretical expressions of photoionization cross section can be used to describe the photoionization process of atoms in condensed matter properly.

PACS: 32.80.Fb, 78.20.Ci, 77.22.-d

Key words: condensed-phase photoionization, optical constant, dielectric constant

[Full text: PDF]

Close