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Modeling the optical constants of $\text{Cu}_2\text{In}_4\text{Se}_7$ and CuGa_3Se_5 crystals

M. León¹, R. Serna², S. Levchenko³, A. Nateprov³, A. Nicorici³, J. M. Merino¹, and E. Arushanov⁴¹Departamento Física Aplicada, Universidad Autónoma de Madrid, C-XII, 28049 Madrid, Spain²Instituto de Optica, CSIC, Serrano 121, 28006 Madrid, Spain³Institute of Applied Physics, Academy of Sciences of Moldova, Chisinau MD 2028, Moldova⁴Institute of Applied Physics, Academy of Sciences of Moldova, Chisinau MD 2028, Moldova and Departamento Física Aplicada, Universidad Autónoma de Madrid, C-XII, 28049 Madrid, Spain[View Map](#)

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Spectral dependence of the pseudodielectric function $\epsilon(E) = \epsilon_1(E) + i\epsilon_2(E)$ as well as of the complex refractive index, extinction coefficient, absorption coefficient, and normal-incidence reflectivity of $\text{Cu}_2\text{In}_4\text{Se}_7$ and CuGa_3Se_5 ordered vacancy compound crystals are modeled in the 0.8–4.4 eV photon energy range using a modification of Adachi's model [T. Kawashima et al. J. Appl. Phys. **84**, 5202 (1998)] for optical properties of semiconductors. Model parameters are determined using the acceptance-probability-controlled simulated annealing method. Excellent agreement with experimental data is obtained; the relative errors for the real ϵ_1 and for imaginary ϵ_2 part of the dielectric function are equal to 0.9%–1.5% and 3.2%–4.1% for the studied compounds.

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Article Outline

- I. INTRODUCTION
- II. THEORETICAL MODEL
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