Optical and structural properties of orthorhombic and tetragonal polymorphs of Cu2CdGeSe4

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Optical and structural properties of orthorhombic and tetragonal polymorphs of $Cu_2CdGeSe_4$

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Abstract

The quaternary $Cu_2CdGeSe_4$ (CCGSe) is a potential absorber material for thin film solar cells. This study presents the results of photoluminescence (PL) and X-ray diffraction analysis of high-temperature and low-temperature CCGSe polycrystals with orthorhombic (space group $Pmn2_1$) and tetragonal (space group $I\bar{4}2m$) crystal structure, respectively. Detailed PL analysis revealed different dominating radiative recombination mechanisms for orthorhombic and tetragonal CCGSe.

1. Introduction