

# Turkish Journal of Physics

Turkish Journal



Admittance and Impedance Spectroscopy on Cu(In,Ga)Se<sub>2</sub> Solar Cells

of

Habibe BAYHAN, A. Sertap KAVASOĞLU

Department of Physics, Muğla University, 48000 Muğla-TURKEY e-mail: hbayhan@mu.edu.tr

Physics

 [Keywords](#)  
 [Authors](#)



[phys@tubitak.gov.tr](mailto:phys@tubitak.gov.tr)

[Scientific Journals Home](#)  
[Page](#)

**Abstract:** The present work reports some experimental results on the electrical properties of high efficiency ZnO/CdS/Cu(In,Ga)Se<sub>2</sub> heterojunction solar cells. Admittance spectroscopy has been employed for characterisation of the bulk and interface levels in the absorber Cu(In,Ga)Se<sub>2</sub> layer. The temperature dependent capacitance-frequency analysis indicated an emission from a shallow acceptor like defect level with an activation energy of about 75 meV. Information on the equivalent circuit model of the devices has been provided by the analysis of impedance measurements. The impedance data are presented in the Nyquist plot at several dc bias voltages at 300 K. The equivalent circuit model consisting of a parallel resistor and capacitor in series with a resistor is found to give a good fit to the experimental data.

**Key Words:** CIGS, Solar cell, Admittance spectroscopy, Impedance spectroscopy and Equivalent circuit.

---

Turk. J. Phys., **27**, (2003), 529-536.

Full text: [pdf](#)

Other articles published in the same issue: [Turk. J. Phys.,vol.27,iss.6.](#)