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Study of optical properties of polar and non-polar ZnO using Terahertz time domain spectroscopy YU-HSUAN LIN, DER-JUN JANG, MING-YEN CHUNG, HAO-CHE HSU, YUNG-SUNG CHEN, CHI-CHAN HUANG, WAN-CHEN HSIEH, Department of Physics,National Sun Yat-sen University —
In this paper, we have studied the frequency dependent optical properties of polar and non-polar ZnO. The sample was measured in different region of the same axis for ZnO which is parallel with axis a and m in C-plane. We found the signals in the same axis perform identically and have similar data. We also observed the optical properties of A-plane ZnO before and after annealing. The calculated refractive index for extinction coefficient and conductivity. Finally, the Drude model was used find the fit data and obtain the carrier concentration and mobility. In A-plane ZnO case, there is a mobility 231.98(cm^2/Vs) rise to 786.32(cm^2/Vs) before and after annealing.

Wei-Sheng Cheng
Department of Physics,National Sun Yat-sen University

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