Extracting Electronic Structure in Amorphous Oxide Semiconductors from Photoresponse

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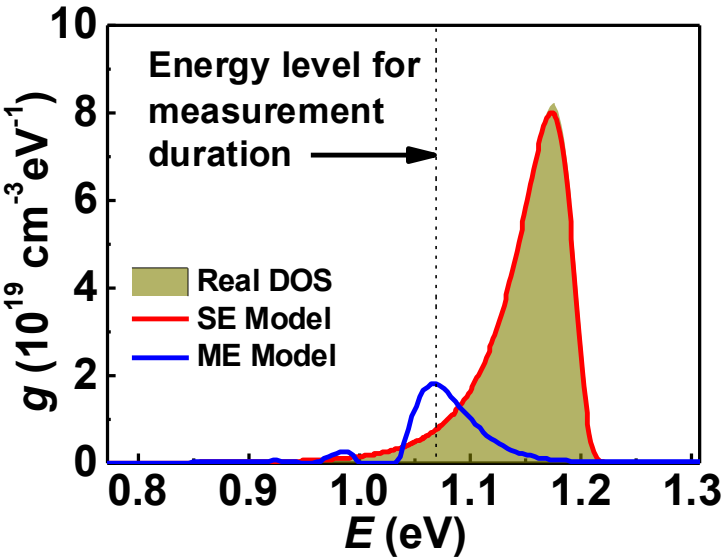
- Amorphous oxide semiconductors (AOS) provide superior performance and lower cost for next generation displays. However, instability under illumination remains a critical issue.
- In this work, the photoconductivity decay was investigated to deduce deep trap density.
- Traditional multi-exponential model is shown to fail in light of short time scales (days) in relation to natural time scales (months)
- Instead, stretched exponential (SE) model is shown to accurately predict correct long term photoresponse with significantly shorter measurement duration.
- Trap density as function of O_2 doping is studied



Comparison of the electronic structure extracted using stretched exponential (SE) model and multi-exponential (ME) model from photoresponse with short measurement duration.

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