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## Optimizing electrical conductivity and optical transparency of IZO thin film deposited by Radio Frequency (RF) magnetron sputtering

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Transparent Conducting Oxide (TCO) thin films of  $I_{n2}O_3$ , SnO<sub>2</sub>, ZnO, and their mixtures have been extensively used in optoelectronic applications such as transparent electrodes in solar photovoltaic devices. In this project, I deposited amorphous Indium–Zinc Oxide (IZO) thin films by radio frequency (RF) magnetron sputtering from a  $I_{n2}O_3$ –10 wt.% ZnO sintered ceramic target to optimize the RF power, argon gas flowing rate, and the thickness of film to reach the maximum conductivity and transparency in visible spectrum. The results indicated optimized conductivity and transparency of IZO thin film is very closer to ITO's conductivity and transparency, and is even better when the film was deposited with one special tilted angle.

## **Biography**

Lei Zhang is an Associate Professor of Physics at Winston Salem State University. He completed his PhD in Applied Physics and has expertise in Optics and Materials. His research interest includes "Electro-optical properties of crystalline materials, fiber-optics devices, micro-hardness of crystals, carbon nanofibers, polymer micelles and thin films". He was working on a National Science Foundation (NSF) sponsored MRSEC program to develop and optimize IZO thin films in room temperature. The result shows that the electrical conductivity and optical transparency in IZO thin film deposited by radio frequency magnetron sputtering are similar to these of ITO.

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