

Abstract Submitted  
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**Characterization of reactive magnetron sputtering plasma during thin film deposition.** RYLAN GORDON, HASITHA MAHABADUGE, Department of Chemistry, Physics and Astronomy, Georgia College State University — Reactive magnetron sputtering is used extensively as a thin film deposition technique. During sputtering, a plasma is generated. The evolution of the plasma dictates the thin film composition and structure. The residence time of a reactive gas molecule, the mean time it remains in the process chamber before being pumped away also plays an important role in reactive sputtering. We simulated the residence time and partial pressure of the respective reactive gasses in magnetron sputtering environment using Matlab. Using Optical Emission Spectroscopy we confirmed the trend in mean residence time of the reactive gasses. The thin film properties of reactively sputtered aluminum-doped zinc oxide will be presented along with the correlation to the plasma properties during the deposition.

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