## Critical layer thickness determination for GaN thin films grown on sapphire substrate via hollow-cathode plasma-assisted atomic layer deposition

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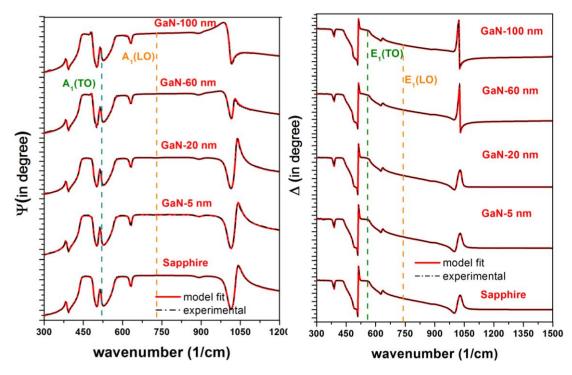


Figure 1. Model of psi and delta versus wavenumber for PEALD GaN films grown on sapphire

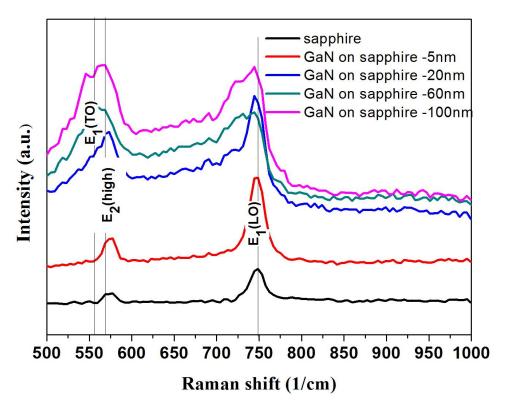


Figure 2. Raman spectra with 633 nm excitation for various GaN film thicknesses.