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ANALYSIS OF NITRIDE SEMICONDUCTORS

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Nitride semiconductors have attracted significant attention because of their applications in blue and ultraviolet photonic devices. The growth of epitaxial layers by metalorganic chemical vapor deposition (MOCVD) and molecular beam epitaxy (MBE) requires tight control on purity, alloy composition, doping, thickness, as well as interface quality. Secondary ion mass spectrometry (SIMS) complements photoluminescence (PL) and Rutherford backscattering spectrometry (RBS) and provides a wealth of information to materials scientists and device engineers. This paper will describe the recent research work on III nitride characterization. Data on SIMS ion yield systematics and detection limits will be discussed. Examples of recent applications pertaining to device characterization and reverse engineering will also be presented.