Spectroscopic Ellipsometry characterization of the interfacial roughness in thin SIMOX wafer

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Abstract

The performance of thin film microelectronic devices on SIMOX SOI substrates is highly dependent on the nature and perfection of the top-Si/BOX and BOX/sub-Si interfaces. In this research we demonstrate a non-destructive and in-situ characterization method of spectroscopic ellisometry that is sensitive to these two interfacial regions. The dielectric functions of the composite materials in the transition regions were calculated using the Bruggeman Effective Approximation (BEMA). In addition, the interfacial roughness was also studied by TEM.