

Abstract Submitted
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Interfacial stability of RuO₂ on HfxSi_{1-x}O₂/Si¹ VAISHALI UKIRDE, CHANGDUK LIM, MANUEL QUEVEDO-LOPEZ, MOHAMED EL BOUANANI, Dept. of Materials Science, University of North Texas — Alternative metal-based gate electrodes are currently under consideration as a replacement of Poly-Si gates. Metal gates are required to maintain scaling and performance of future CMOS devices. Ru based compounds are potential gate electrode candidates for future metal-oxide-semiconductor (MOS) devices. RuO₂, with thickness of 500Å were deposited on HfxSi_{1-x}O₂/Si structures by DC sputtering. These structures were annealed in flowing N₂ atmosphere at temperatures ranging from 800C to 1000C. The thermal stability and interfacial diffusion and reaction of RuO₂ on HfxSi_{1-x}O₂/Si gate dielectric were investigated using Rutherford Backscattering Spectrometry (RBS) and SEM. An overview of RuO₂/ HfxSi_{1-x}O₂/Si interface integrity and pinhole formation issues will be presented.

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