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Revealing Conducting Filament Evolution in Low Power and High Reliability Fe₃O₄/Ta₂O₅ Bilayer RRAM

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Abstract

In this work, we used the polycrystalline-Fe₃O₄ to improve the reliability of the Ag/Ta₂O₅/Pt resistive random access memory (RRAM). In both the Ag/Ta₂O₅/Fe₃O₄/Pt and Ag/Fe₃O₄/Ta₂O₅/Pt structures, the switching properties for these bilayer RRAMs were measured in atmosphere and vacuum environments. The results demonstrated that the humidity would affect the Ag filament formation in different environments, and the Ta₂O₅ and Fe₃O₄ interface

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