

Design and Synthesis of Multi Functional Noble Metal Based Ternary Nitride Thin Film Resistors

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In recent years, multifunctional ternary nitride thin films have received extensive attention due to its versatility in many applications. In particular, noble metal based ternary nitride thin films showed a promising properties in the application of Multifunctional heating resistor films because its good electrical properties and excellent resistance against oxidation and corrosion. In this study, we prepared multifunctional noble metal based ternary nitride thin films by atomic layer deposition (ALD) and plasma-enhanced ALD (PEALD) method. ALD and PEALD techniques were used due to their inherent merits such as a precise composition control and large area uniformity, which is very attractive for preparing multicomponent thin films on large area substrate. Here, we will demonstrate the design concept of multifunctional noble metal based ternary thin films. And, the relationship between microstructural evolution and electrical resistivity in noble metal based ternary thin films will be systemically presented. The useful properties of noble metal based ternary thin films including anti-corrosion and anti-oxidation will be discussed in terms of hybrid functionality.

Keywords: Multifunctional thin films, Atomic layer deposition, Platinum group metals