

## Improvement of the Pd activation by Sn sensitization in Ag electroless plating

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In electroless plating of silver, improvement of the population of the catalyst particles is the most important factor for early formation of continuous and thin film. In metallization process in ULSI technology, Pd activation with oxidation of TiN substrate using HF shows better adhesion than the combination of Sn sensitization and Pd activation (adsorption of Sn colloidal particles and Sn-Pd displacement reaction). However, the competition between oxidation and reduction limits the density of Pd clusters. In this study, Sn sensitization was used prior to the Pd activation, and Pd clusters show lower roughness and smooth morphology. It may be due to the lower interface energy between Pd clusters and TiN substrate. By the improving of the Pd activation, the incubation time for the formation of continuous film was decreased. It also shows linear relationship with the hydrophilic character of the substrate after various Sn sensitization conditions.