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Advances in Electroless Metal Deposition

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Message from the Guest Editors

Electroless metal plating is a well-known method for deposition of metal coatings as well as for the formation of small (nano-scale) metal particles by a controlled chemical reduction. The autocatalytic metal ion reduction systems are widely used for decorative and functional purposes, i.e., for deposition of conductive metal layers on dielectrics, semiconductors or on conductors with a complicated configuration without an external current. The selection of a suitable reducing agent and conditions of the reaction plays a very important role in creating stable solutions and obtaining coatings with the required characteristics. On the other hand, the use of conventional hydrogen-containing reducing agents is connected with environmental and technological problems: (i) the plating bath cannot be recycled, i.e., the reducing agent oxidizes irreversibly; and (ii) the plating rate and solution stability are not high enough, which lead to the current search and investigations of the reducing agents of a new type. Additionally, it is worth noting that investigation of electroless plating systems in non-aqueous solutions is also important for the development of new technological processes.





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