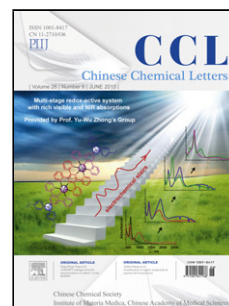


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Review

Plasmonic biosensing based on non-noble-metal materials

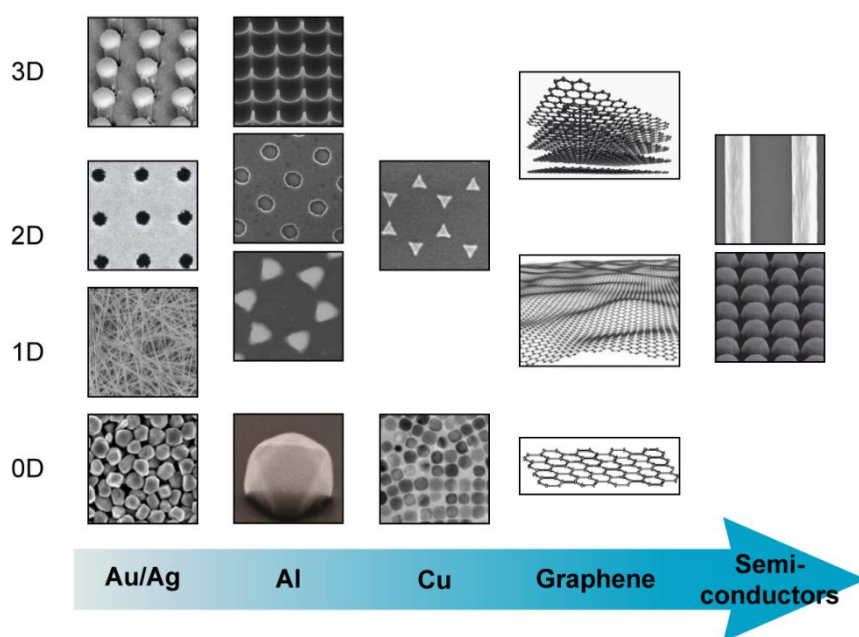
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Graphical Abstract



This review focuses on the research progress of non-noble-metal materials with nanostructures for plasmonic biosensing. Firstly, the physical and sensing principles of localized surface plasmon resonance (LSPR) sensors are briefly introduced; then non-noble-metal materials, such as copper, aluminum, semiconductor, graphene and other materials, for plasmonic sensing are categorized and presented. Finally, a rational discussion about the future prospective of novel materials for plasmonic sensing is given.

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ABSTRACT

Plasmonic nanostructures can confine light through localized surface plasmon resonance (LSPR), thereby enabling highly sensitive, label-free, and real-time physical and chemical sensing. Nowadays, the LSPR biosensing based on noble metal is still restricted in research laboratories, due to the limitations of their intrinsic properties, high prime price, and high process cost. Researchers thereby have paid attention to the non-noble metals and semiconductor materials in recent years. This review focuses on the research progress of non-noble-metal materials with nanostructures for plasmonic biosensing. Firstly, the physical and sensing principles of LSPR sensors are briefly introduced; then, non-noble-metal materials, such as copper, aluminum, semiconductor, graphene and other materials, for plasmonic sensing are categorized and presented. Finally, a rational discussion about the future prospective of novel materials for plasmonic sensing is given.

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