

Au ion-driven peptide self-assembly and its novel application for peroxidase-like catalysis

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Peptide is one of the representative organic materials for various functional nanostructures via a self-assembly. It is self-assembled to diverse nanostructure by interacting between the peptide building blocks. Metal ion-derived inorganic and organic nano-hybrid has lots of potentials for the various applications. Here, we report PEPAu nanostructures derived from gold-ion and tyrosine-rich peptide as novel nanocatalyst. Spherical type of PEPAu nanostructure was simply developed in aqueous phase by thermal control. Morphological study about PEPAu nanostructure was confirmed by TEM analysis. The resulting PEPAu nanostructure was furtherly characterized by UV/Vis, SEM, FT-IR, XPS, XRD. To utilize this PEPAu nanocatalyst, reducing agent was furtherly used to confirm the reduced Au ion or metallic advantage. We applied this novel PEPAu nanostructure to peroxidase mimetic catalysis. This biomimetic catalyst was easily screened via TMB oxidation. Based on the above results, it is expected that this PEPAu nanostructure will be applied to various fields as well as colorimetric detection and determination.