

A biomimetic and self assembled PEP-Pd complex for cross couplings in aqueous phase as a recyclable catalyst

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Peptide is one of the representative biomaterials featuring the self-assembly phenomenon, which is related with several human disease. Metal ions or metal nanoparticles can take important roles in creating a peptide self-assembly by interacting with the functional groups on the side chain of amino acid moieties. Especially, tyrosine-rich peptides are relatively efficient to induce the peptide self-assembly because they have a lot of oxygen molecules and nitrogen molecules that are strongly interactive with metal ions. . Here, we prepared a peptide self assembly-Pd nanoparticles hybrid derived from a tyrosine-rich peptide, YYACAYY, as a novel recyclable and environment-friendly catalysts for C-C cross coupling reactions. The resulting PEP-Pd complex in a spherical type was simply created in the aqueous phase by controlling the temperature. Thereafter, they were characterized by SEM, EDS, ICP-OES and FT-IR. The catalytic activity of PEP-Pd hybrid was evaluated by a cross couplings in aqueous phase. Interestingly, PEPpd could be re-assembled and recovered after coupling reactions, which provides the convenient recycling process. Our work indicates that this PEP-Pd hybrid can be a highly recyclable catalyst.