



一種製備含奈米顆粒的高導電性碳纖維之方法及其用途

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市場及需求：

電催化方式降解/去除水中及空氣中有機物污染物

技術摘要(含成果)：

一種製備含奈米顆粒的高導電性碳纖維之方法，將聚丙烯腈(PAN)與溶劑(例如：二甲基甲醯胺(DMF)、N,N-二甲基乙醯胺(DMAc)、二甲基亞砜(DMSO)等)以均勻混合的方式製成分散溶液，並將奈米顆粒與溶劑以分散混合的方式製成奈米顆粒溶液，隨後將分散溶液及奈米顆粒溶液，以混合加熱攪拌的方式製成聚合物溶液，將聚合物溶液置於自動進樣注射裝置中利用靜電紡絲技術製備出含奈米顆粒的靜電紡絲纖維，隨後碳化即可製備出本發明含奈米顆粒的高導電性碳纖維(Carbonized fibers, CF)。

優勢：

本發明之一目的為提供一種含奈米顆粒的高導電性碳纖維，透過添加不同奈米顆粒(例如：TiO₂、Pt、Au、SnO₂等)，可將所得之含奈米顆粒的高導電性碳纖維作為新型功能性催化電極，具有可以電催化方式降解/去除水中及空氣中(例如結晶紫、異丙醇、雙酚A等)有機物污染物之優勢。

競爭產品：

溶膠凝膠-浸漬法製備高導電石墨烯塗層玻璃纖維

專利現況：

專利申請中

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A method for preparing high conductivity carbonized fibers decorated with nanoparticles.

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Market Needs:

Electrocatalytic degradation of water or air pollutants

Our Technology:

A method for preparing high conductivity carbonized fibers decorated with nanoparticles. First, a molecular disperse solution was prepared by dissolving polyacrylonitrile (PAN) in a solvent such as dimethylformamide (DMF), N, N-dimethylacetamide (DMAc) and dimethyl sulfoxide (DMSO). Suspensions of nanoparticles was dispersed in a solvent to form a uniform solution, which was added into molecular disperse solution and stirred with heating overnight. The prepared polymer solution was placed in electrospinning device to fabricate an electrospun fibers. Followed by carbonization process, we can obtain a high conductivity carbonized fibers decorated with nanoparticles.

Strength:

One object of this invention is to provide a high conductivity carbonized fibers decorated with nanoparticles. By adding different nanoparticles, such as TiO₂, Pt, Au, SnO₂, the resultant carbonized fiber can be severed as a promising functional catalytic electrode. These electrode with catalytic properties have the advantage of Electrocatalytic degrading or removing organic pollutants in water and air, such as crystal violet, isopropanol, bisphenol A, etc.

Competing Products: Preparation of highly conductive graphene-coated glass fibers by sol-gel-impregnation method

Intellectual Properties: Application in progress

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