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REVIEW

Conducting polymer–silver composites

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Preparations of hybrid composites composed of two conducting components, a conducting polymer and silver, are reviewed. They are produced mainly by the oxidation of aniline or pyrrole with silver ions. In another approach, polyaniline or polypyrrole are used for the reduction of silver ions to metallic silver. Other synthetic approaches are also reviewed. Products of oxidation of aniline derivatives, including phenylenediamines, are considered. Morphology of both the conducting polymers and the silver in composites displays a rich variety. Conductivity of the composites seldom exceeds 1000 S cm^{-1} and seems to be controlled by percolation. Interfacial effects are also discussed. Potential applications of hybrid composites are outlined; they are likely to extend especially to conducting inks, printed electronics, noble-metal recovery, antimicrobial materials, catalysts, and sensors.

Keywords: polyaniline, polypyrrole, poly(*o*-phenylenediamine), poly(*p*-phenylenediamine), silver, silver nanoparticles, hybrid composites, conductivity

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