Polypyrrole

Subjects: Polymer Science

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Polypyrrole is an intrinsically conducting polymer formed by the oxidative polymerisation of pyrrole, giving a conjugated backbone with a nitrogen heteroatom in each repeat unit. Conductivity appears only in the doped, oxidised state, and the counter-ion incorporated during synthesis remains part of the material [1]. Chemical or electrochemical routes give different morphologies, ranging from granular films to nanotubes, and the morphology controls both the accessible surface and the switching rate [2]. The polymer is brittle and insoluble, so it normally appears as a coating on a textile or as a composite with a flexible matrix [3]. Composite electrodes with carbon or metal oxide additions give higher capacitance than the polymer alone, at the cost of cycling stability [4].

conducting polymer | doping | conjugated backbone | supercapacitor | over-oxidation | pyrrole | composite electrode

References

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