

## EDITORIAL

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## What Do We Call Conducting Polymer Electrodes?

Historically, when electrochemists began coating “traditional” electrode materials (Pt, Au, Graphite, etc.), generally the objective was to either provide a size selective porous barrier to prevent fouling of the electrode surface, especially in *in vivo* experiments, or to immobilize accessible electrocatalytic redox centers, such as enzymes, on the electrode. The polymers used were always non-conducting materials. Such electrodes were, rightfully, always called or classified as “polymer modified electrodes”.

With the discovery of both inorganic and, subsequently, organic conducting polymer materials, electrochemists naturally began to experiment with these materials. Many significant applications in electrocatalysis, sensor design, etc., have been reported over the past 15 to 20 years. Investigators invariably refer to these as “conducting polymer modified electrodes”. For example, looking at the titles and abstracts for talks at the recent PITTCON 97 Meeting in Atlanta, GA (including three by students/postdoctorates in my

own group), one will find “.....Conducting Polymer Modified Electrodes...”. I have always told my group (obviously in vain) that these are “conducting polymer electrodes”. The reasons being are the facts that (1) one can show that the electron transfer in redox reactions occurs at the organic-solution interface in almost all cases; (2) the electrokinetics of any redox reaction is totally independent of the nature of the metal or carbon substrate electrode material on which the conducting polymer film is formed by electropolymerization; and (3) these polymer films can be peeled off the substrate electrode and used as a stand-alone flag and the electrokinetic properties remain the same.

Thus, I consider these conducting polymers as a **NEW CLASS OF ELECTRODE MATERIAL** and should *not* be referred to as modified electrodes.

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