

Corrosion Protection with Conducting Polymers: A General Model Describing Both, Corrosion Protective and Corrosion Stimulation Behaviour

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Conducting polymers have been discussed in the past decade as potential substitutes for today's highly effective, but also environmentally hazardous chromium(VI) and lead anti-corrosive pigments. In particular, a German-based company has stimulated the ongoing discussion with their *miracle-like* results and descriptions of the new polymeric materials as "passivators" and "organic metals". However, a *market-oriented* approach for revealing the potential of conducting polymers as anti-corrosive pigment materials is not appropriate today, because of huge variances in experimental corrosion protection effects spanning from the case of excellent protection to the one of catastrophic corrosion. The current paper will introduce conducting polymers as anti-corrosive materials on the basis of sound knowledge about passivation, state-of-the-art passivators, properties of electrochemically active coatings, theories on passivation and the *key-properties* of conducting polymers as they apply to the new application.