

M. Schäferling, P. Bäuerle, *J. Mater. Chem.* **2004**, *14*, 0000-0000 :
"Porphyrin-functionalized oligo- and polythiophenes".

Abstract:

The synthesis and properties of a series bi- and terthiophenes **3-8** substituted with *meso*-tetraphenylporphyrin (TPP) groups via isolating oxaalkyl chain is described. Electrooxidative polymerization leads to the corresponding metal complexed porphyrin-functionalized polythiophenes **P4-P8**. The electrochemical and spectroscopic properties of the polymer films reveal the superimposition of the electronic properties of the individual π -systems. Spectroelectrochemical experiments and conductivity measurements point to a mixed charge transport mechanism. Polaronic and bipolaronic delocalization on the conjugated chains combined with electron hopping processes *via* the porphyrin redox centers result in a high stability of the polymers against overoxidation. Importantly, hybrid materials have been obtained which at the same time exhibit properties of a conducting polymer and a redox polymer that can be used for the detection of polychlorinated phenols in amperometric sensors.