## Conducting inks: extended polypyrrole nanostructured colloids

Patrycja Bober<sup>1\*</sup>, Yu Li<sup>1,2</sup>, Miroslava Trchová<sup>1</sup>, Jaroslav Stejskal<sup>1</sup>

<sup>1</sup>Institute of Macromolecular Chemistry Academy of Sciences of the Czech Republic, 162 06 Prague 6, Czech Republic; <sup>2</sup> Department of Applied Chemistry, School of Science, Xi'an Jiaotong University, Xi'an 710049, People's Republic of China

## \*bober@imc.cas.cz

Polypyrrole (PPy) [1,2] is one of the most known conducting polymers. PPy has interesting properties, such as biocompatibility and stability under *in-vivo* conditions, reversible doping and redox properties. Globular polypyrrole colloids are produced by the oxidation of pyrrole in the presence of suitable water-soluble polymers, e.g., poly(*N*-vinylpyrrolidone) [3]. When methyl orange is introduced to the polymerization mixture, as the structure-guiding agent, extended PPy colloids based on nanotubes and nanorods are produced instead. The films deposited from colloids of PPy nanotubes/nanorods had conductivity two orders of magnitude higher than those cast from colloid of ordinary PPy nanoglobules. Dynamic light scattering measurement demonstrated that PPy nanotubes/nanorods have average particles sizes around 500 nm with a dispersity index about 0.3. Moreover, the extended PPy nanostructured colloid exhibited improved electrochemical activity. Non-spherical PPy colloids are thus attractive candidates for conducting inks for printing of transparent conducting layers used as flexible sensors or electrodes.



**Figure 1.** Transmission electron micrographs of PPy colloids and nanotubular PPy colloid coated on flexible poly(ethylene terephthalate) foil.

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## References

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