Electroactive polymer composites for bioelectronics

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Ionic and electronic conductive polymers show a great interest in the field of bioelectronics, at the interface between electronics and biology. This is due to its excellent capability to actively participate in different devices which convert ionic signals into electronic signals (and *vice versa*). [1] Moreover, their soft nature, charge transport and composition allow them to integrate well with both the solid substrate as well as the living tissue. So far, most of the polymers used by the bioelectronics community are based on commercial availability of polymers developed for devices such as OLEDs, transistors or solar cells.

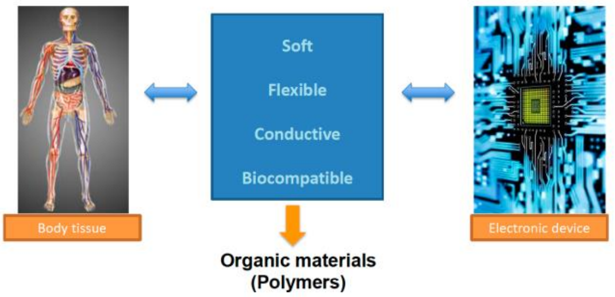

Figure 1: Organic bioelectronics demands new materials

In this presentation we will show our efforts and activities in the development of tailored conducting polymers and composite for bioelectronic devices. Emerging applications of these materials require new combination of properties such as high ionic or (electronic)conductivity, printability, biodegradability, compatibility with the electrodes/biological tissue or mechanical properties. Our activities include on the one hand new electronic conducting PEDOTs including low temperature cross-linked materials or more biocompatible films than PEDOT/PSS [2-4] On the other hand, soft ion conducting polymer electrolytes based on iongels and biodegradable polymers will be also presented. The final application of these innovative polymers in several devices such as organic transistors, light-emitting devices and electrodes for electrophysiology will be shown [5-6].

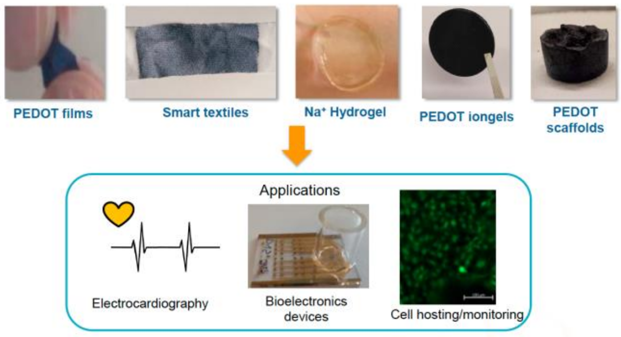

Figure 2: Innovative materials and applications

References

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