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Micellar Electrolytes in Organic Electrochemical Transistors FABIO CICOIRA, Ecole Polytechnique de Montréal, TARABELLA GIUSEPPE, CNR-IMEM Parma, GAURAV NANDA, Ecole Polytechnique de Montréal, SALVATORE IANNOTTA, CNR-IMEM Parma, CLARA SANTATO, Ecole Polytechnique de Montréal — Organic electrochemical transistors (OECTs) are promising for applications in sensing and bioelectronics. OECTs consist of a conducting polymer film (transistor channel) in contact with an electrolyte. A gate electrode immersed in the electrolyte controls the doping/dedoping level of the conducting polymer. OECTs can be operated in aqueous electrolytes, making possible the implementation of organic electronic materials at the interface with biology. The inherent signal amplification of OECTs has the potential to yield sensors with low detection limits and high sensitivity. In this talk we will present recent studies on OECTs using ionic surfactants (such as hexadecyl-trimethyl-ammonium bromide) as electrolytes. As the conducting polymer we used PEDOT:PSS, i.e. (Poly,3-4 ethylenedioxythiopene) doped with Poly(styrene sulphonate). Interestingly, ionic surfactant electrolytes result in large transistor current modulation, especially beyond the critical micellar concentration (CMC). Since micelles play a primary role in biological processes and drug-delivery systems, the use for micellar electrolytes opens new exciting opportunities for the use of OECTs in bioelectronics.

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