

Abstract Submitted
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Sensing with electrochemical transistors¹ FABIO CICOIRA², MSE Department Cornell University, GEORGE G. MALLIARAS, Cornell University — Organic electrochemical transistors are particularly promising for applications in chemical and biological sensing and are expected to play a primary role in the emerging field of organic bioelectronics [1]. These devices can be operated in aqueous electrolytes as ion-to-electron converters, thus providing an interface between the worlds of biology and electronics. OEECTs sensors are currently able to detect micromolar analyte concentrations. Besides their application in sensing, OEECT can help understanding the distribution of ions at the interface between conducting polymers and electrolytes. Of particular interest is the ratio between ions that accumulate at the surface vs. ions that enter in the polymer film, as this ratio ultimately determines the ease with which a conducting polymer can be de-doped (hence, it controls the maximum detectable analyte concentration). We addressed this issue by using energy dispersive X-ray spectroscopy to study the change in chemical composition of the conducting polymers PEDOT:PSS upon application of a gate bias in presence of several electrolytes. [1] F. Cicoira, M. Sessolo, O. Yaghmazadeh, J. A. DeFranco, S. Y. Yang, G. G. Malliaras, *Adv. Mater.* 2009, 21 (in press).

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