

Water-gated organic transistors on polyethylene naphthalate films

Rafael Furlan de Oliveira^{a,b,§}, Stefano Casalini^{a,*,#}, Tobias Cramer^c, Francesca Leonardi^{c,#},
Marystela Ferreira^d, Vincenzo Vinciguerra^e, Valeria Casuscelli^f, Neri Alves^g, Mauro
Murgia^c, Luigi Occhipinti^h, Fabio Biscarini^a

a Dipartimento di Scienze della Vita, Università di Modena & Reggio Emilia (UNIMORE), Via Campi 103, 4125 Modena, Italy

b Programa de Pós-graduação em Ciência e Tecnologia de Materiais (POSMAT), Universidade Estadual Paulista (UNESP), 17033-360 Bauru, Brazil

c Istituto per lo Studio dei Materiali Nanostrutturati, Consiglio Nazionale delle Ricerche (ISMN-CNR), Via Gobetti n.101, I-40129 Bologna, Italy

d Departamento de Física, Química e Matemática (DFQM), Universidade Federal de São Carlos (UFSCar), 13505-780 Sorocaba, Brazil

e STMicroelectronics, Analog & MEMS Group (AMG), Str. Primosole 50, 95121 Catania, Italy

f STMicroelectronics, Analog & MEMS Group (AMG), Via Remo de Feo 1, 81022 Arzano (Naples), Italy

g Faculdade de Ciências e Tecnologia (FCT), Universidade Estadual Paulista (UNESP), 19060-900 Presidente Prudente, Brazil

*** corresponding author**

e-mail address: scasalini@icmab.es (S. Casalini)

current addresses:

Institut de Ciència de Materials de Barcelona, Consejo Superior de Investigaciones Científica (ICMAB-CSIC), Bellaterra (Barcelona), 08193 Spain.

£ University of Cambridge, Electrical Engineering Division, 9 JJ Thomson Avenue Cambridge CB3 0FA, United Kingdom

§ Laboratório Nacional de Nanotecnologia (LNNano), Centro Nacional de Pesquisa em Energia e Materiais (CNPEM), 13083-970 Campinas, Brazil

Supporting Information

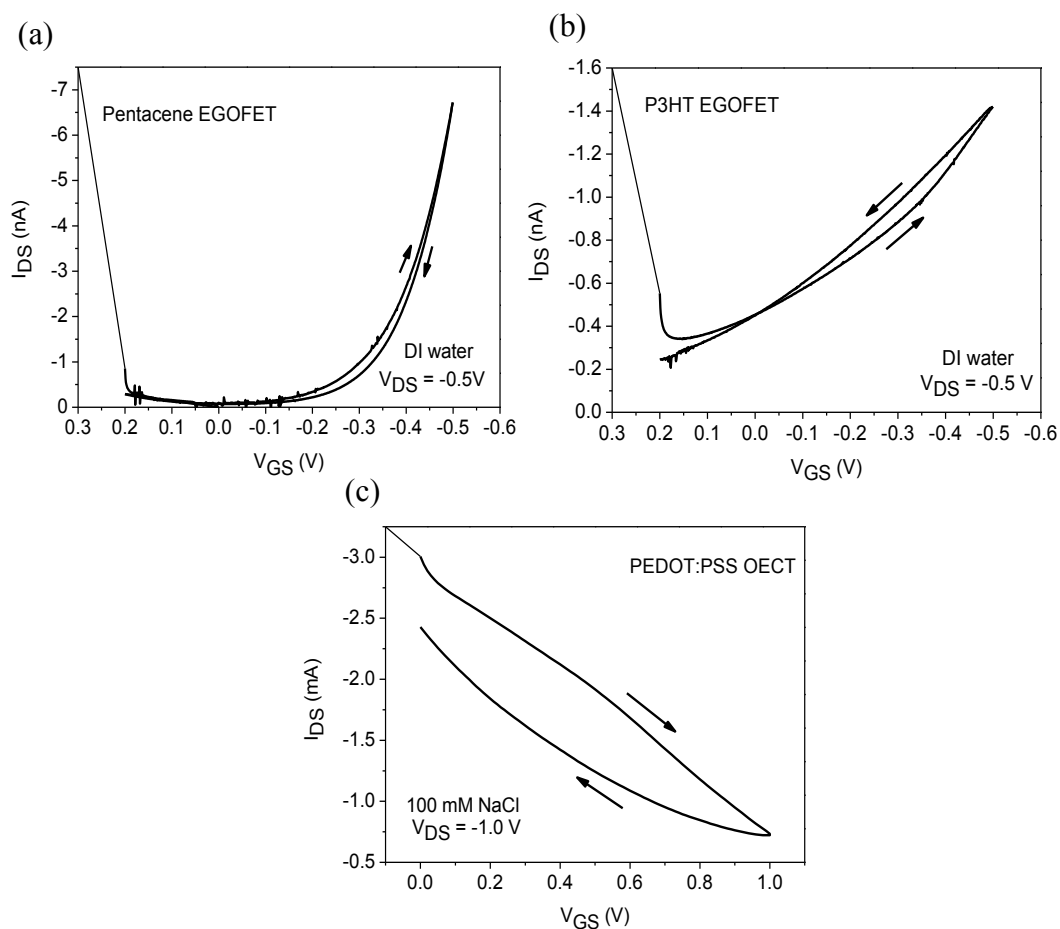


Figure S1: I-V Transfer curves (I_{DS} vs. V_{GS}) for pentacene (a), P3HT (b) and PEDOT:PSS (c) water-gated transistors onto PEN substrates.

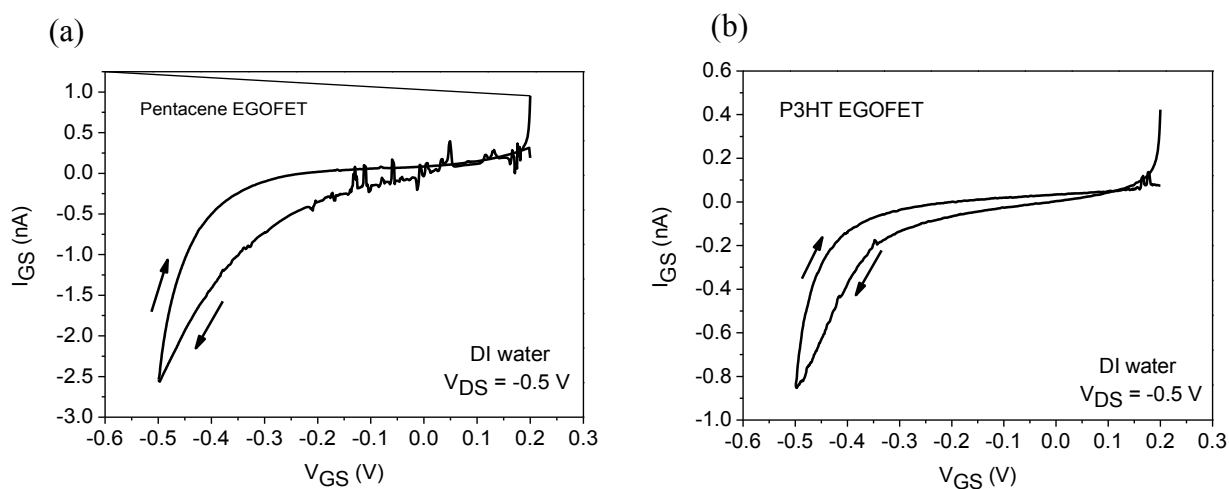


Figure S2: Gate leakage currents (I_{GS}) for pentacene (a) and P3HT (b) EGOFETs fabricated on PEN. Measurements were carried out in deionized water.

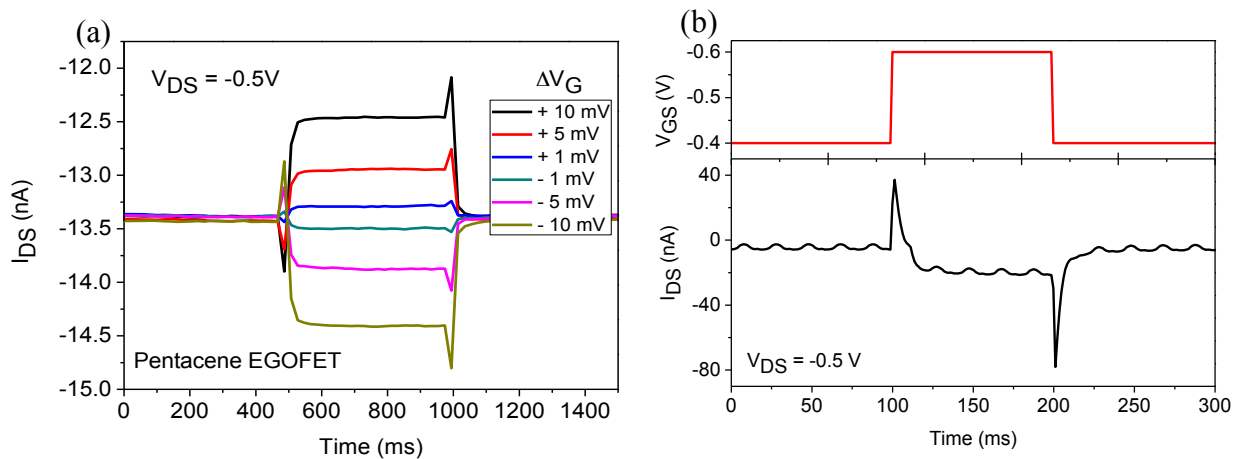


Figure S3: (a) Potentiometric sensitivity and (b) switching speed plots for the pentacene EGOFET fabricated on PEN. Measurements were carried out in deionized water.

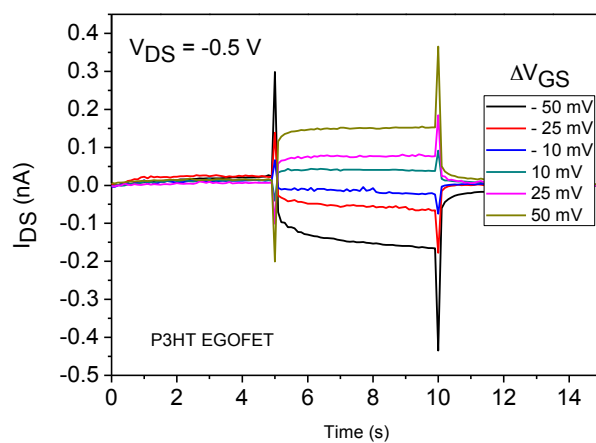


Figure S4: Potentiometric sensitivity of the P3HT EGOFET.