Supplementary Material (ESI) for Chemical Communications

Electrochemical transistors with ionic liquids for enzymatic sensing

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Device fabrication

Fig. S1 shows the OECT fabrication process. A glass substrate was cleaned with oxygen plasma and was subsequently treated with a (tridecafluoro-1,1,2,2-tetrahydrooctyl)trichlorosilane (FOTS) monolayer using a molecular vapor deposition system (MVD 100, Applied Microstructures Inc.). A PEDOT:PSS film was patterned by the parylene lift-off technique.[1] The first step involved the deposition of a parylene film on the FOTS coated glass. A photoresist was deposited and patterned on top of the parylene film and the pattern was transferred to the underlying parylene and FOTS layers by oxygen plasma etching. A PEDOT:PSS film was then deposited on the surface by spin-coating [mixture of PEDOT:PSS (Clevios PH500, HC Starck) and ethylene glycol (4:1 by volume)], and baked at 140 ^{o}C on a hotplate for 1 hr. The parylene was then peeled-off leaving a patterned PEDOT:PSS film surrounded by a FOTS layer. Photoresist was deposited and patterned on both the contact pad areas and the area where the analyte solution was to be accommodated, and FOTS was deposited once more on the device. The photoresist was removed by acetone and the device was washed with water and dried by nitrogen. It is worth noting that 0.5 wt% of 3-glycidoxypropyltrimethoxysilane was added to the PEDOT:PSS mixture to improve the stability of PEDOT:PSS film in aqueous solutions.

1. J. A. DeFranco, B. S. Schmidt, M. Lipson and G. G. Malliaras, *Org. Electron.*, 2006, **7**, 22-28.

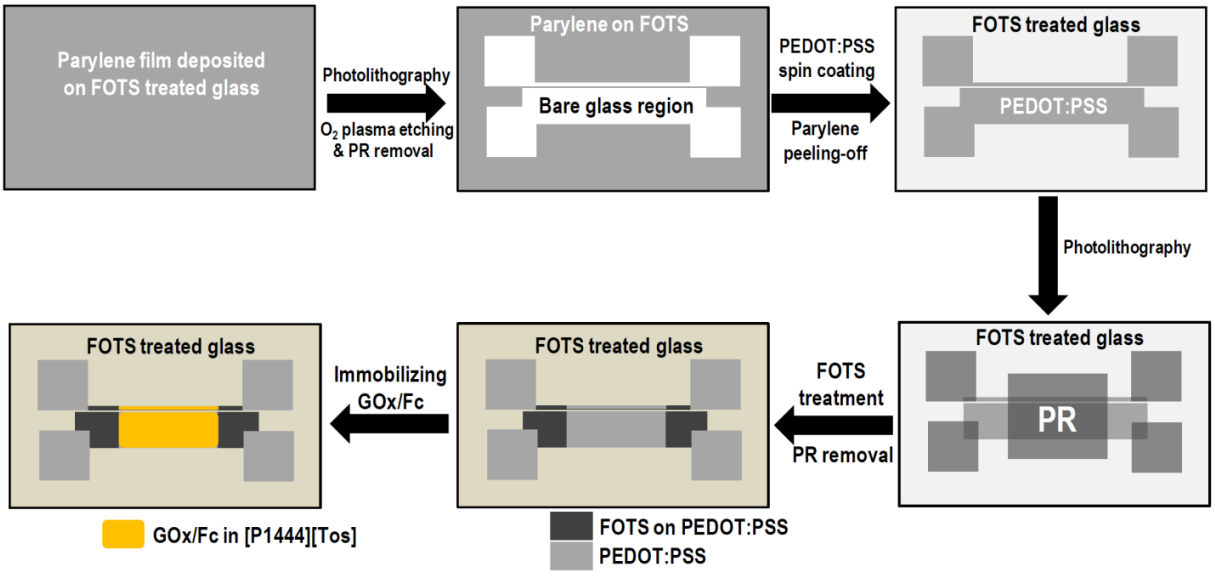

Fig. S1: OECT fabrication process.