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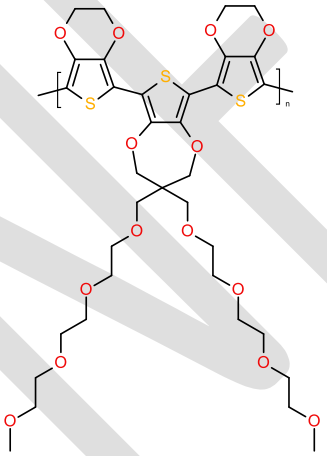
Organic Nano Electronic (ONE=1) Materials for these who understand quality

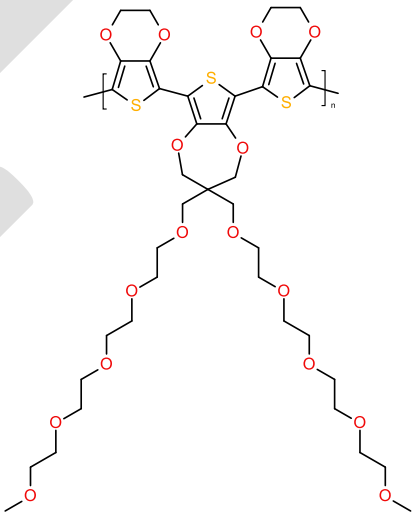
Technical Data Sheet

1M Material:	Organic Mixed Ion-Electron Conductor (OMIEC)
Common Name:	PE2-OE3, PE2-OE4
Potential Applications:	Electrochromic, Energy Storage, OECT, OMIEC and BioEL

Chemical Structure:



PE2-OE3/PE2-O4



PE2-OE4/PE2-O5

Appearance:	Shine green solid
Molecular Weight:	~20K, (Mw), PDI~2.5 (GPC, PS standards)
Purity:	99+% (basing on NMRs of monomers)
Solubility:	Soluble in chloroform and other selected solvents
Reference:	DOI: 10.1002/adfm.202412554

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Highlights from references: DOI: (10.1002/adfm.202412554)

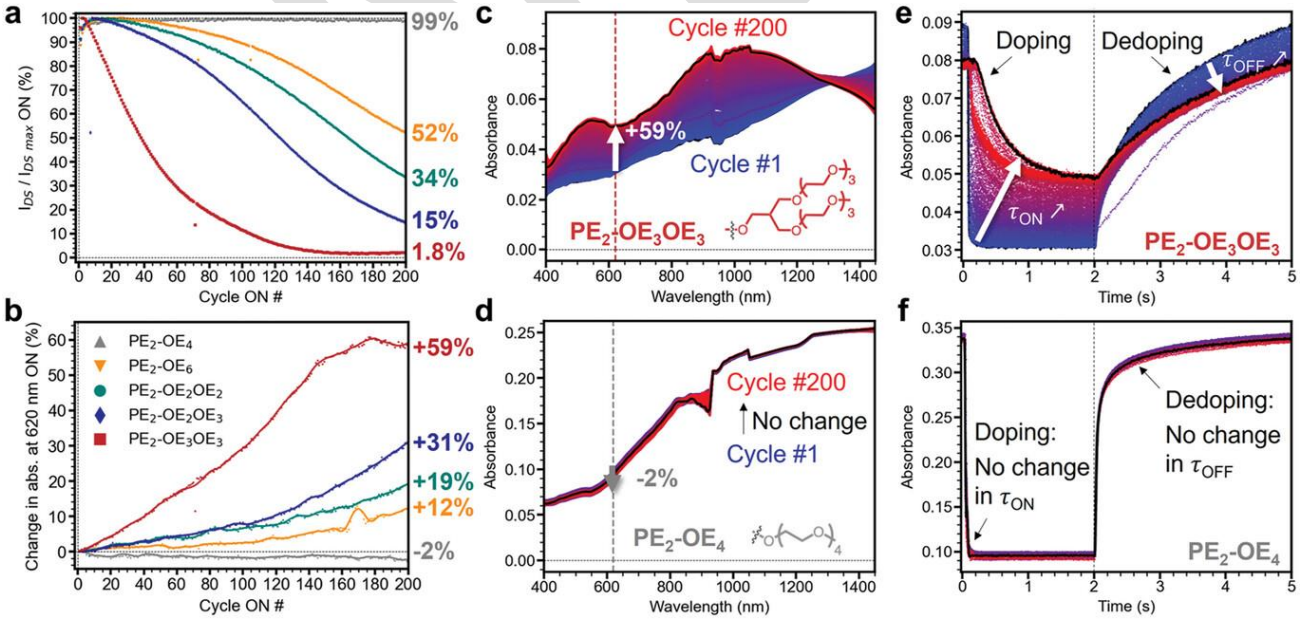
*Incorporation of the unfunctionalized biEDOT unit increases backbone planarity and overall electroactive polymer content.

*Decreasing the side-chain size to approximately the molar mass of the electroactive backbone is optimal for PE_2 copolymers (≈50% electroactive polymer content).

OECTs made of PE_2OE_4 with linear OE side chains of four OE units yield a normalized transconductance of 453 ± 70 S cm^{-1} and μC of 830 ± 37 F cm^{-1} V^{-1} s^{1} and a pulsing stability of 99% I_{DS} retention after 200 ON/OFF cycles in aqueous NaCl electrolyte.

*PE_2-OE_4 (PE_2-OE_3 not studied here) brings an important combination of solution processability, low operational voltages, and promising pulsing stability given its high transconductance, thereby deeming PE_2-OE-based devices of high interest for the detection of biological events and amplifying signals for electrophysiological recordings.

*This work highlights the importance of considering the electroactive polymer content as a key parameter in the design of future OMIECs.



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