

Synthesis and Characterization of Poly(Hydroxymethyl EDOT) and Poly(Ethylene glycol)

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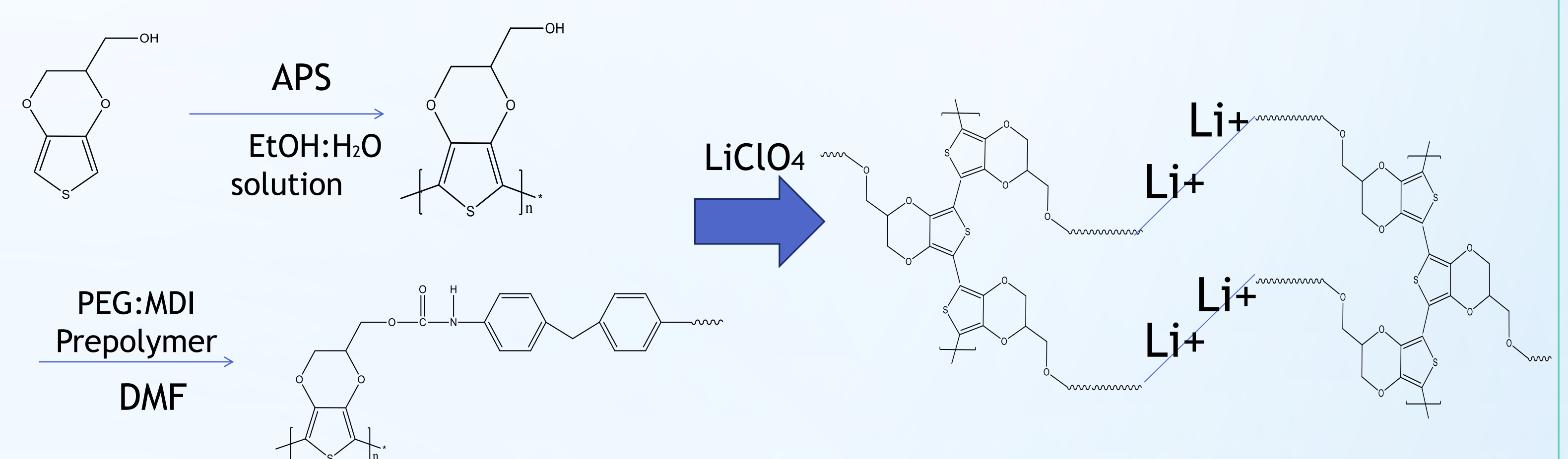
Abstract

A chemically bonded to a conjugated polymer was prepared for the use as a designed ladder-type structure by the graft copolymerization of Poly(Hydroxymethyl EDOT) (PHEDOT) with Poly(ethylene glycol) (PEG). One of the most successful conducting polymer, poly(3,4-ethylenedioxythiophene) (PEDOT), has synthetic flexibility and facility is the key to many new EDOT based monomers, (co)polymers. And Poly(Hydroxymethyl EDOT) is one of the derivatives of PEDOT, used to main frame of new synthestic material and PEG as the rungs in this poster. We have Checked electronic character of this synthetic material according to PEG molecular weight, added ionic conductivity compared to that of PEG/LiClO₄. According to this experiments, we'll find possibility for used this material any fields of technology.

Objectives

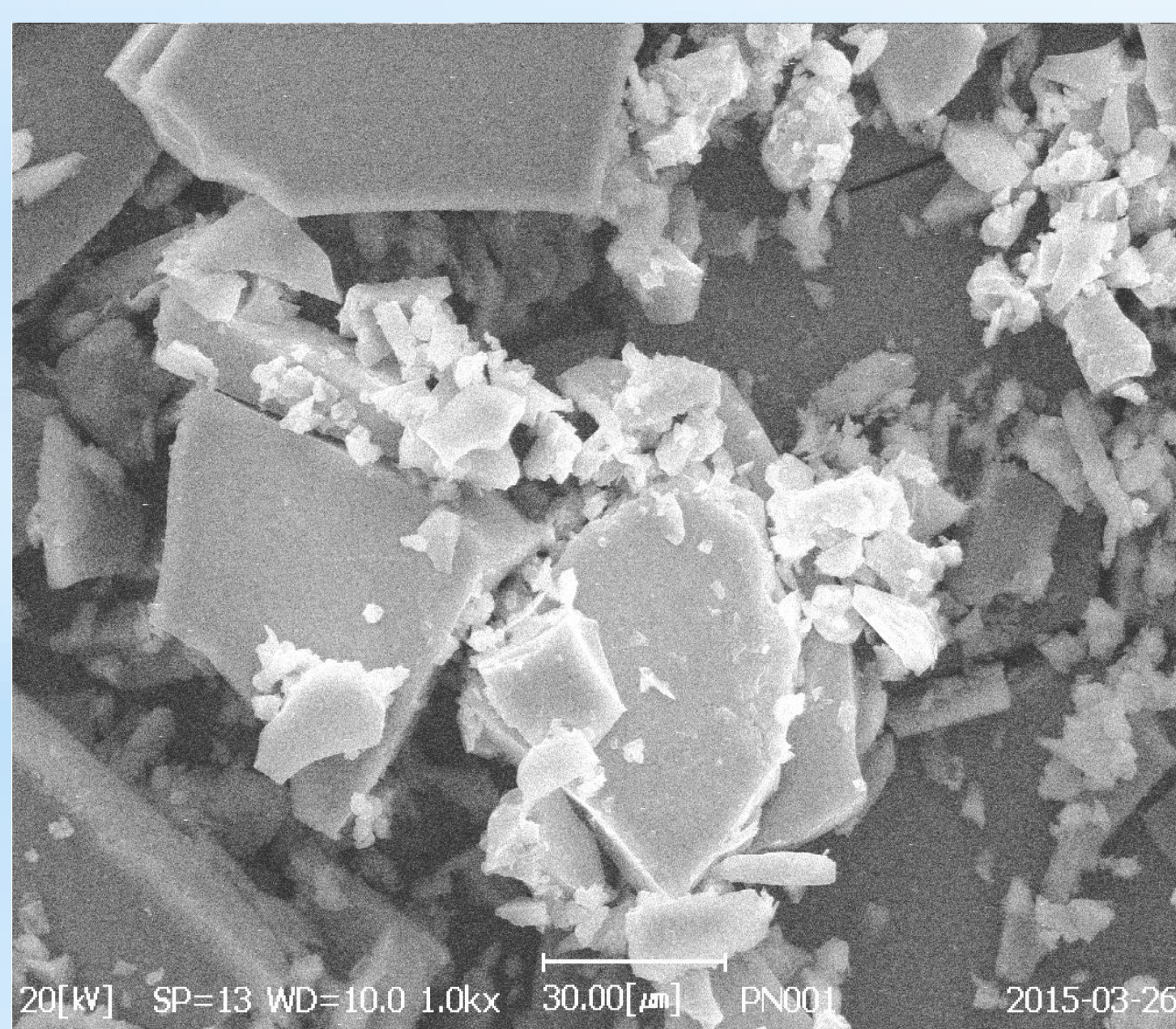
1. To synthesis ladder-type PHEDOT-MDI-PEG network copolymer.
2. To measure transmittance of PHEDOT-MDI-PEG network copolymer.
3. To observe Morphology of PHEDOT and Network copolymer by SEM.
4. To compare and analyze electro conductivity of PHEDOT and Ionic conductivity of Network copolymer with PEG/LiClO₄.

Experiment

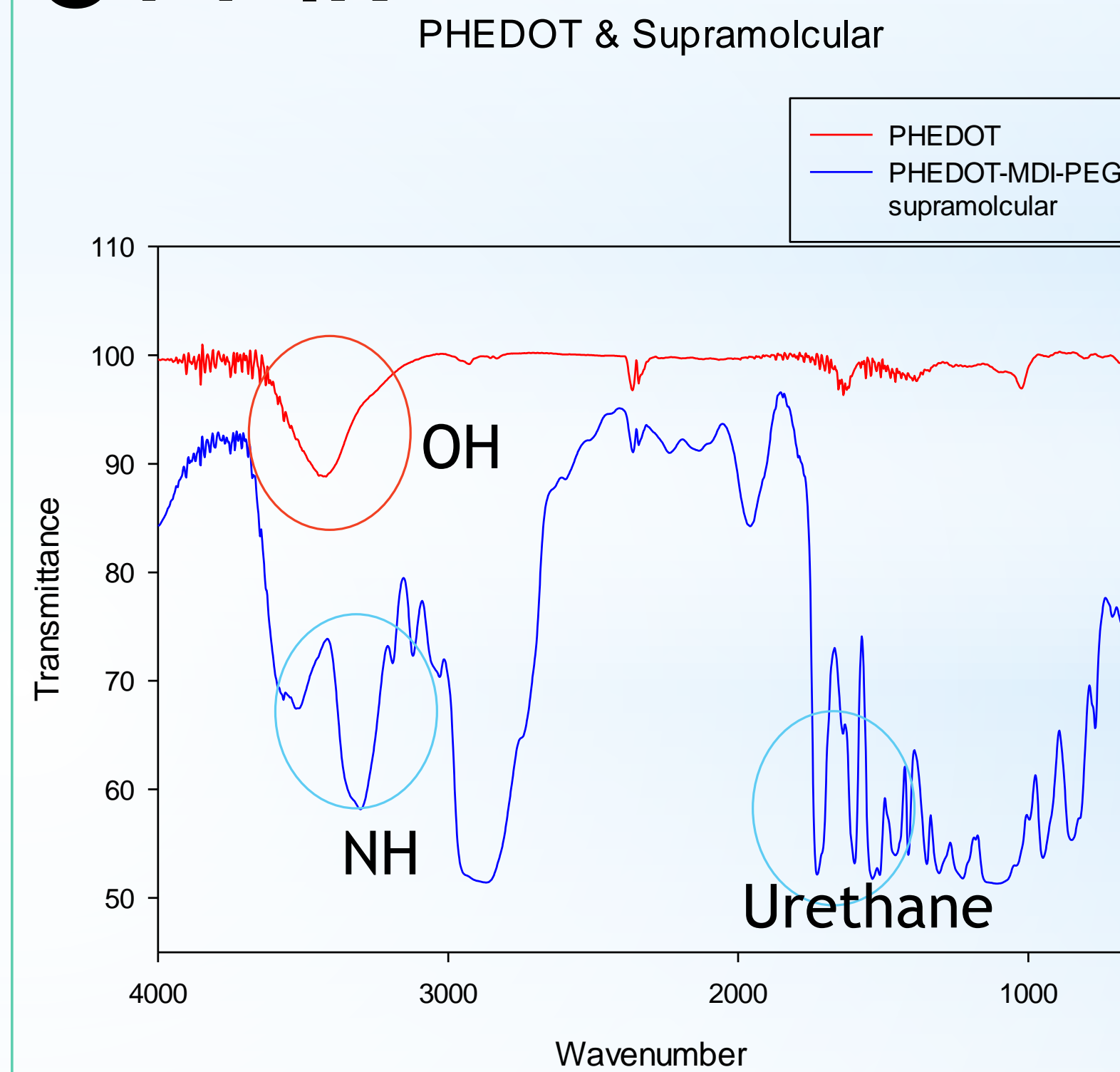


Results

SEM

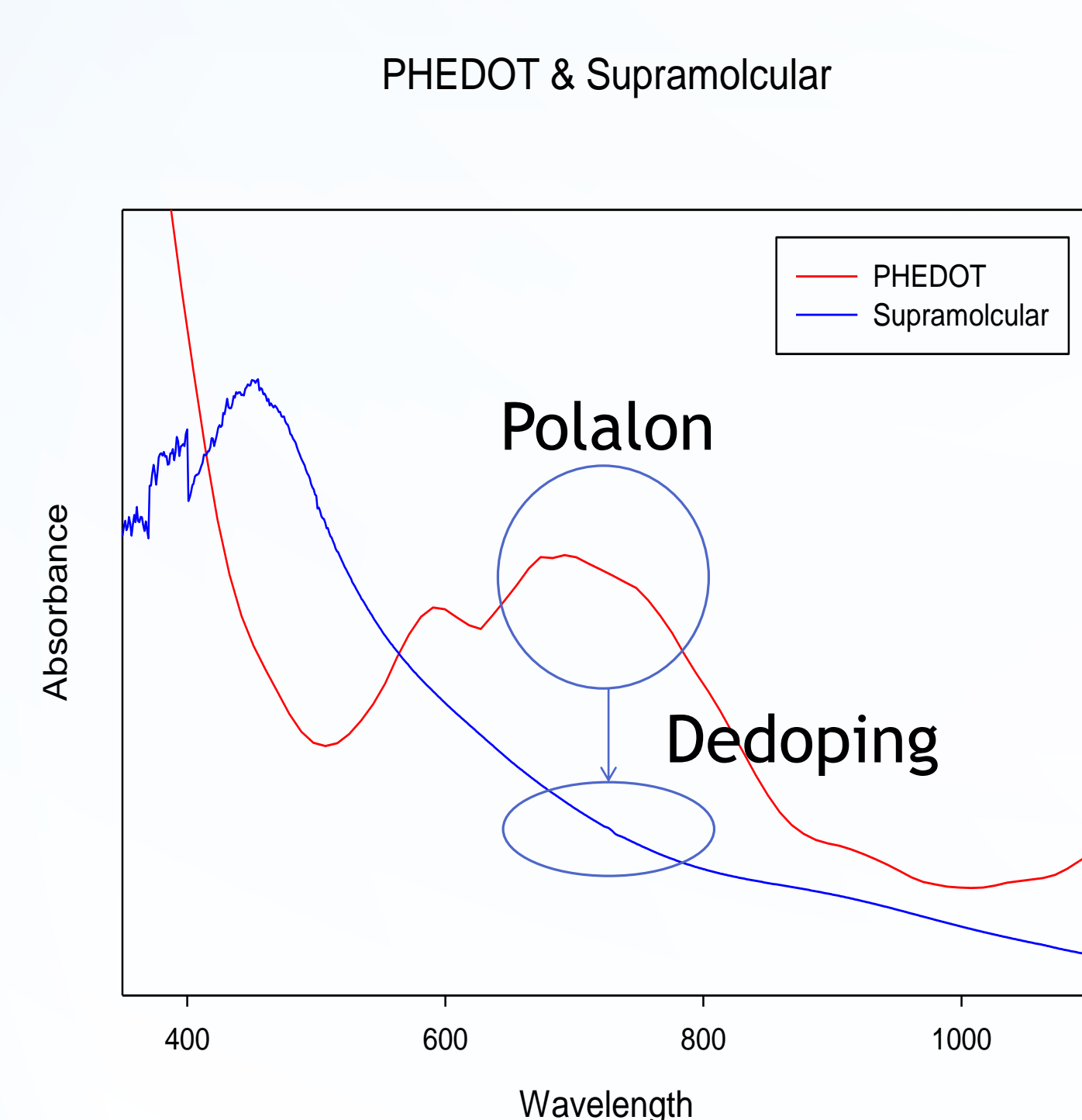
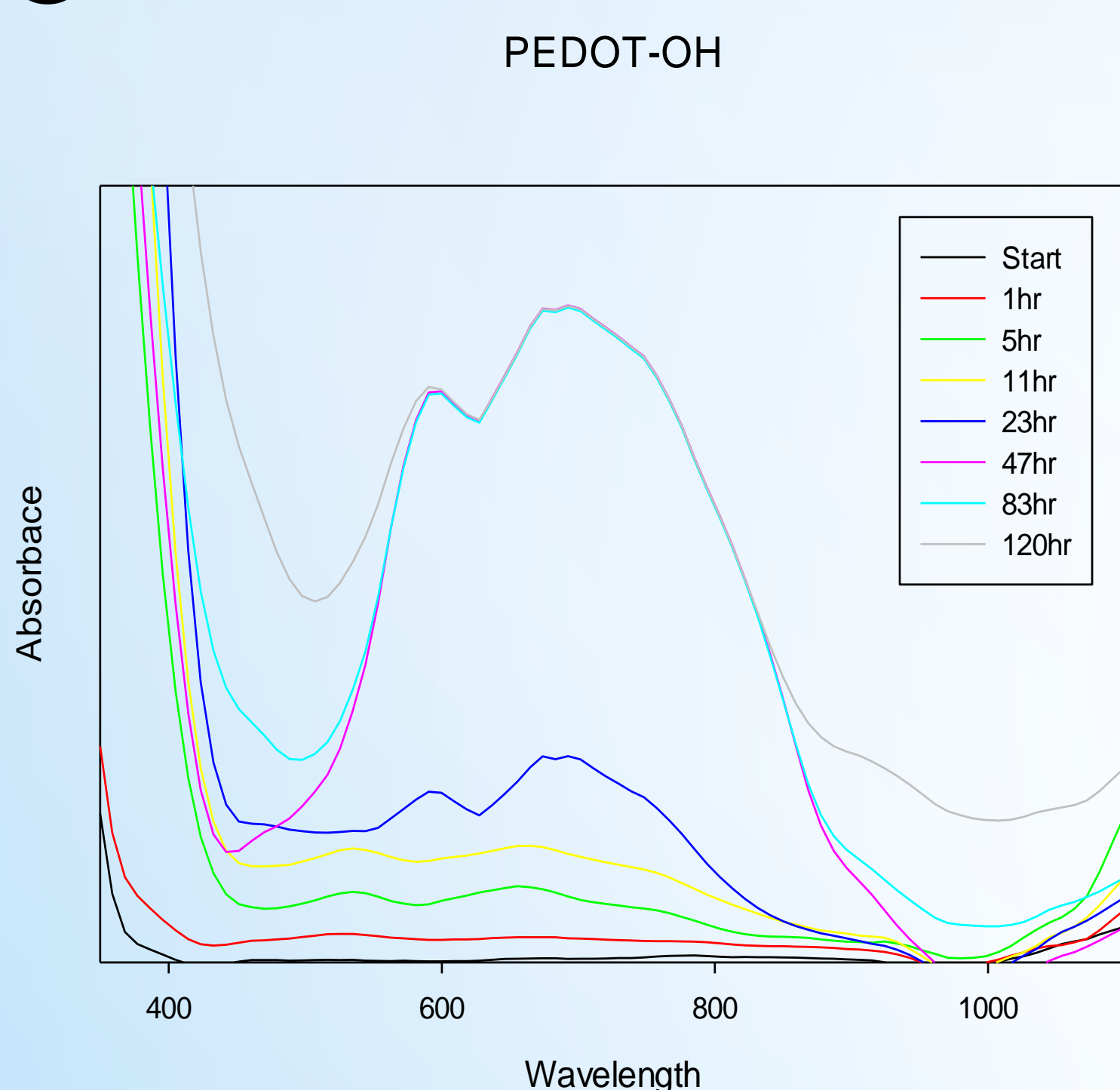


FT-IR

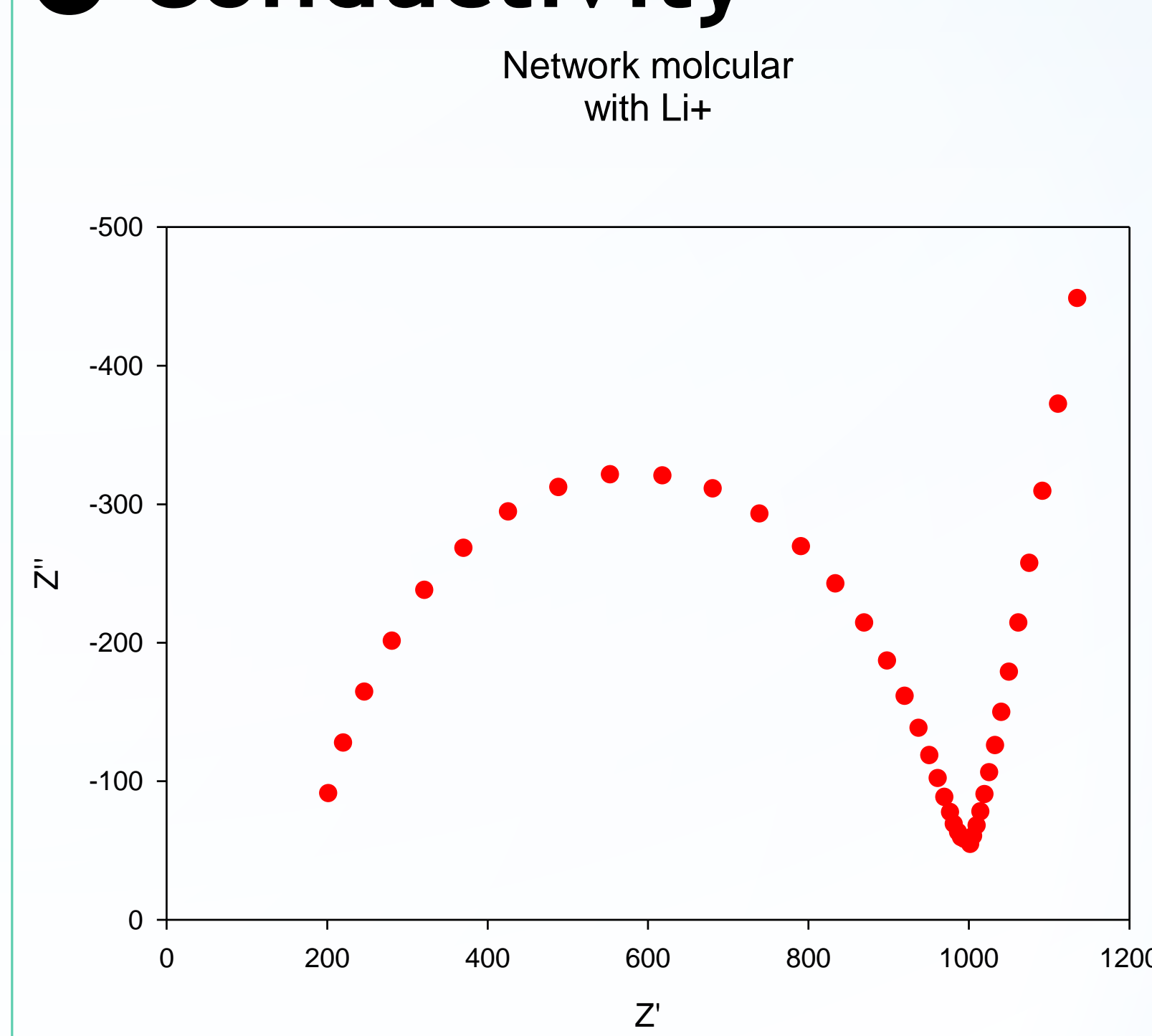


Functional group	Before	After
-OH	3416	-
-NH	-	3302
Urethane	-	1500-2000

UV



Conductivity



Material	Thickness	Resistance (Ω/□)	Electroconductivity (S/cm)
Pure PHEDOT	13.2mm	8.008	1 × 10 ⁻⁶

Material	Thickness	Resistance (Ω/□)	Area (c)	Ionic conductivity (S/cm)
Network copolymer	13.2mm	8.008	9	1.735 × 10 ⁻⁴

Conclusion

Conducting Polymer which the combination of copolymer PHEDOT and PU may exhibit the synergetic ability for electronic devices. PHEDOT have stiff molcular flexibility that because bother to polyurethane intrinsic properties. Nevertheless this network copolymer film have more flexible than normal conducting polymer. When it could be achieved optimized to synthesis the high synergetically PHEDOT-co-PU and it can be revolutionary material modern and future material.

Acknowledgment

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