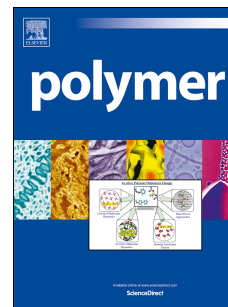


Accepted Manuscript

In-situ synthesis of thiophene-based multifunctional polymeric networks with tunable conductivity and high photolithographic performance

Pedro J. Rodríguez-Cantó, Mariluz Martínez-Marco, Juan F. Sánchez-Royo, Juan P. Martínez-Pastor, Rafael Abargues



PII: S0032-3861(16)31090-4

DOI: [10.1016/j.polymer.2016.12.003](https://doi.org/10.1016/j.polymer.2016.12.003)

Reference: JPOL 19239

To appear in: *Polymer*

Received Date: 28 September 2016

Revised Date: 1 December 2016

Accepted Date: 2 December 2016

Please cite this article as: Rodríguez-Cantó PJ, Martínez-Marco M, Sánchez-Royo JF, Martínez-Pastor JP, Abargues R, In-situ synthesis of thiophene-based multifunctional polymeric networks with tunable conductivity and high photolithographic performance, *Polymer* (2017), doi: 10.1016/j.polymer.2016.12.003.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

1 In-Situ Synthesis of Thiophene-based
2 Multifunctional Polymeric Networks with
3 Tunable Conductivity and High
4 Photolithographic Performance

5

6 *Pedro J. Rodríguez-Cantó^{a,*}, Mariluz Martínez-Marco^b, Juan F. Sánchez-Royo^b, Juan*
7 *P. Martínez-Pastor^b and Rafael Abargues^{a,b,*}.*

8 ^a Intenanomat S.L., Catedrático José Beltrán 2, 46980, Paterna (Spain).

9 ^b Instituto de Ciencia de los Materiales, Universidad de Valencia, P.O. Box 22085,
10 46071 (Spain).

11

12 Design of novel multifunctional polymeric materials combining electrically conducting
13 properties with patterning capability is a significant challenge in materials science.
14 Herein, we report on the synthesis of multifunctional interpenetrating polymer networks
15 (IPN) by the in-situ oxidative polymerization of thiophene-based monomers with
16 $\text{Cu}(\text{ClO}_4)_2$ inside a novolac-based photoresist. The resulting IPNs show conductivities
17 up to 20 S/cm depending on the monomer properties. Among them, 3,3''-Diethyl-
18 2,2':5',2'':5'',2'''-quaterthiophene (DH4T) is chosen because it has the largest
19 conjugation length and excellent solubility in organic solvents. Moreover, it renders a
20 low percolation threshold and smooth surface morphology if compared with
21 terthiophene (3T). FTIR and XPS spectroscopy confirm the DH4T polymerization by
22 $\text{Cu}(\text{ClO}_4)_2$ and provide some insights about the doping level of the conducting polymer.

Download English Version:

<https://daneshyari.com/en/article/5178515>

Download Persian Version:

<https://daneshyari.com/article/5178515>

[Daneshyari.com](https://daneshyari.com)