Insight Medical Publishing

Archives in Chemical Research

ISSN 2572-4657

2020

Vol.4 No.5

# *Effect of hybridization of silica in the electromechanical properties of large strain strain sensor based on conductive polymer-elastomer hybrid prepared via in situ vapor phase polymerization*

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***Abstract***

In this study, conducting polymer – SiO2 hybrid conductive strain sensors fabricated via simultaneous co-vaporization of conductive polymer (CP) with tetraethyl orthosilicate (TEOS) are reported. Poly(3,4-ethylenedioxythiophene) (PEDOT) and polypyrrole (PPy) systems prepared using the oxidant, iron (III) p-toluenesulfonate(FTS) with thermoplastic polyurethane (TPU) as the substrate are both explored and the effect of hybridization on the sensing performance and mechanical properties of the sensors was investigated. The SiO2 was formed mostly on the surface and the CP was still successfully polymerized within the TPU matrix. It was found out that the hybrid sensor had enhanced mechanical property, specifically, greater stretchability than its pristine counterpart. Electromechanical test at stretch-release cycles have shown that hybridization is able to enhance relative resistance of the sensor, thereby improving its sensitivity. The use of VPP in creating organic-inorganic hybrid sensor was demonstrated. The combined elastic property and processability of the elastomer, the conductive property of the conducting polymer, the mechanical versatility of the silica and the advantages of the VPP process was successfully integrated in this study.

***Biography:***

Yeon Jae Kim is Professor working in Division of Advanced Materials Engineering, Kongju National University Korea. He also published number of Articles in Various journals.

***Speaker Publications:***

1. “A Case of Kikuchi Fujimoto's Disease Accompanied by Hemophagocytic Lymphohistiocytosis The Korean journal of hematology (2009) Vol 44, Issue 4

2. “Prevalence and Characterization of Plasmid-Medicated Quinolone Resistance Genes among Clinical Isolates of Extended-Spectrum Cephalosporin Resistant Enterobacter cloacae/ Infection and Chemotherapy Vol 41 (2009) - Issue 5

3. “Mutation of the N-ras Gene in a Patient Suffering from the Blast Phase of Chronic Myelogenous Leukemia The Korean journal of hematology Vol 44 Issue 2( 2009) .

7th International Conference on Organic and Inorganic Chemistry; Webinar – June 18-19, 2020.

**Abstract Citation:**

Yeon Jae Kim, Effect of hybridization of silica in the electromechanical properties of large strain strain sensor based on conductive polymer-elastomer hybrid prepared via in situ vapor phase polymerization, Organic Chemistry 2020, 7th International Conference on Organic and Inorganic Chemistry; Webinar-June18-19,2020

(https://organic-chemistry.chemistryconferences.org/abstract/2020/effect-of-hybridization-of-silica-in-the-electromechanical-properties-of-large-strain-strain-sensor-based-on-conductive-polymer-elastomer-hybrid-prepared-via-in-situ-vapor-phase-polymerization)