導電水膠以及其所製成之有機記憶體及超電容

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系所網頁: http://www.che.ntu.edu.tw/che/?p=435

研究室網頁: https://karenkao726.wixsite.com/ntu-ope-lab

市場及需求:

本發明提供之水膠軟性基材以及導電高分子水膠系統，以及其所構成之有機記憶體元件以及超電容元件具備可拉伸性、可撓曲性與長效穩定性，此種材料與軟性元件可與醫學、通訊科技等多元科技相互結合，對於未來穿戴式以及仿生電子元件等應用方面皆極具發展潛力，提高生活水平。

技術摘要(含成果):

本發明提供一種水膠軟性基材以及導電高分子水膠系統，前者包含將兩種帶有氫鍵的烯烴聚合物以特定比例摻合，並以環境友善之試劑進行交聯；後者包含將水性導電高分子分散於前述高分子摻合體製備導電高分子水膠系統。本發明亦提供將水膠軟性基材以及導電高分子水膠系統構組有機記憶體元件以及超電容元件之方式。本發明相較於先前技術，具備了高度可拉伸性、可撓曲性、穩定性、可回收性、環境友善以及製造成本等優勢。

優勢:

本發明所提供的材料相較於傳統的聚胺酯等彈性體材料，具有環境友善、生物親和性等優勢，更適合應用於穿戴式以及仿生電子元件。除此之外，本發明所提供之水膠系統具有高度的回收性，係屬於綠色能源應用之優勢材料。

競爭產品:

金屬氧化物包含氧化鎳與二氧化錳等活性材料以及傳統聚胺酯等彈性體材料及其相關應用產品。

專利現況:

聯絡方式:

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METHODS FOR FABRICATING THE HYDROGEL AND THE CONDUCTIVE POLYMER HYDROGEL SYSTEM

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Experience:

Please refer to the following website for detailed information.
https://karenkao726.wixsite.com/ntu-ope-lab)

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Dean, College, NTU, 2017.8~; Associate Dean, College, NTU, 2011.8~2017.7; Director, Center of Strategic Materials Alliance for Research and Technology, 2013/6~; Polymer Program Coordinator, National Science Council, 2009.01~2011.12; Director, Polymer Nanotechnology Research Center, NTU, 2007~2013; Professor and Director of Polymer science and Engineering, NTU, 2005.8~2011.7; Associate Professor (1996 ~2000), Professor (2000~) of Chemical Eng., NTU; Researcher, Industrial Technology Research Institute (ITRI), 1993~1996

Market Needs:

The invention provides a hydrogel soft substrate and a conductive polymer hydrogel system, and the corresponded organic memory device, supercapacitor composed of the above-mentioned hydrogels possesses stretchability, bendability and long-term stability. These kinds of materials and soft electronic devices are promising for the combination medical and communication technology for future wearable electronic device.

Our Technology:

The invention provides a hydrogel soft substrate and a conductive polymer hydrogel system. The former includes a polymer blend with two kinds of polyolefin equipped with hydrogen bonding and an eco-friendly crosslinking reagent for the hydrogel system. The later includes a polymer blend with a water-soluble conjugated polymer and the above-mentioned hydrogel system. The invention also provides the method for fabricating organic memory and supercapacitor devices with high stretchability, bendability, stability, recyclability eco-friendliness and cost-effectiveness.

Strength:

The invention provides the materials with eco-friendliness and bio-compatibility compared with conventional polyurethane elastomers. This makes the proposed hydrogel materials more promising in the application of wearable and bio-mimic electronic devices. Additionally, the invention provides the hydrogel system with high recyclability and advantage in the application of green energy.

Competing Products:

Metal oxide based active materials and conventional polyurethane elastomers.

Intellectual Properties:

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