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Title: Micro-structures Fabricated by SLA 3D Printing to Enhance the Electro-Chemical Effects of Supercapacitors

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Abstract
In this study, SLA method was used to fabricate three-dimensional micro-structures. A soft polymer such as PDMS was used as a mold to duplicate the pattern of the micro-structures. Polyaniline (PANI) films with micro-structures on the surface using PDMS molds were prepared as eletrodes of supercapacitor. A specific capacitance 391 F/g at a current density of 1 A/g was measured for the PANI micro-structures, while the specific capacitance of PANI plane is 304 F/g. To achieve higher energy storage, laser interference lithograpy was employed to fabricate nano-structures on the micro-structures. The specific capacitance 487 F/g was obtained for the micro/nano hierarchical structures due to increase the surface of PANI electrodes.

Figures:

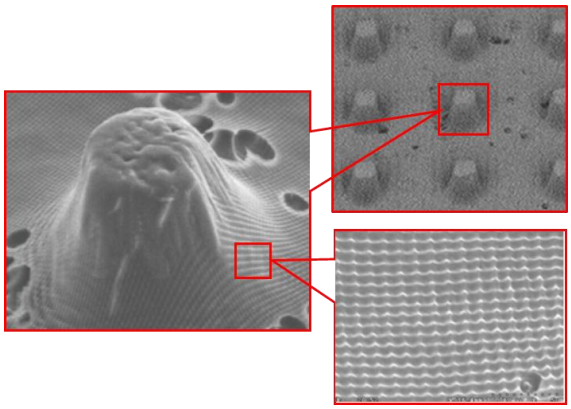


Fig. 1. Hierarchical structures fabricated by SLA 3D printing and laser interference lithography

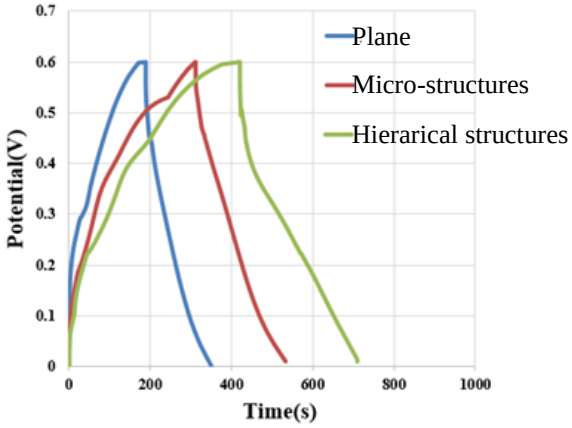


Fig. 2. Charge–discharge cycling curves of the different PANI electrodes at a current density of 1 A/g

Biography
Jiun-Hong Liu studies at Institute of Mechanical Engineering in Chung Yuan Christian University. Major research is in opto-mechatronics.

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