

Thursday Afternoon Poster Sessions, November 10, 2016

MEMS and NEMS

Room Hall D - Session MN-ThP

MEMS/NEMS Poster Session

MN-ThP1 Method for Patterning Poly-Acrylic Acid Sacrificial Layers for Use in Solder Based Self-Assembly for 3D Integration, Connor Smith, Y. Feng, S.L. Burkett, The University of Alabama

Poly-acrylic acid (PAA) has been shown to be a useful material for both sacrificial layers and patterning in micro-fabrication. This usefulness stems from various critical properties of PAA—particularly its high solubility in water. Due to this, PAA results in a much safer environment as opposed to other materials, such as silicon dioxide, which are traditionally etched using hazardous etchants, such as hydrofluoric acid. However, in certain processes, such as solder based self-assembly for 3D integration, a patterned sacrificial layer is highly desirable. Unfortunately, PAA is not a conductive material for this due to the fact that water is so prevalent in many processes' post-patterning and pre-sacrificial layer removal steps and, thus, could result in damage to the PAA layer. This research focuses on providing a technique by which PAA can be used as a patterned sacrificial layer in such processes by taking advantage of the ease with which the substance can be thermally cross-linked and the ability to etch such cross-linked PAA using a solution with a significantly high pH level.

MN-ThP2 An Application of Aligned Electrospun PVDF Nanofibers, Akira Ueda, O. Ali, Fisk University; Y. Zhang, Vanderbilt University; B. Storr, A. Byrne, C.S. Carson, Fisk University; C. Marvinney, A.L. Cook, Vanderbilt University; S. Avanesyan, W.E. Collins, R. Mu, Fisk University

We report an application of the aligned electrospun nanofibers of PVDF, poly(vinylidene fluoride). Although the electrospinning is a quite old technique, recently it has been paid attentions in order to fabricate nano-sized materials. PVDF is a piezoelectric and pyroelectric material, and it is recently found to be aligned nanofibers by using a set of grounded electrodes during electrospinning. By using this delicate material, an application to the molecular sensors will be reported.

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