

Multifunctional carbon foams

Krisztian Kordas,¹ Olli Pitkänen,¹ Geza Toth,¹ Tung Ngoc Pham² and Jyri-Pekka Mikkola²

¹*Microelectronics Research Unit, University of Oulu, FI-90570, Oulu, Finland*

²*Technical Chemistry, Department of Chemistry, Chemical-Biological Center, Umeå University, SE-90187, Umeå, Sweden*

Abstract

Melamine foams pyrolyzed at temperatures above 600 °C offer a versatile light weight, flexible, porous and electrically conductive platform to be used in a broad field from environmental and chemical engineering to electrical applications. In our work, we demonstrate selective liquid absorption and water purification, monolith-type catalyst support, mechanical damping, piezoresistive strain sensing as well as flexible supercapacitor devices that are based on such graphitized scaffolds.¹⁻³

References

1. T.N. Pham, A. Samikannu, J. Kukkola, A.-R. Rautio, O Pitkanen, A. Dombovari, G.S. Lorite, T. Sipola, G. Toth, M. Mohl, J.-P. Mikkola, K. Kordas, *Scientific Reports* 4 (2014) 6933.
2. T.N. Pham, T. Sharifi, R. Sandström, W. Siljebo, A. Shchukarev, K. Kordas, T. Wågberg, J.-P. Mikkola, Robust hierarchical 3D carbon foam electrode for efficient water electrolysis, 2016, *Scientific Reports*, in review.
3. T. N. Pham, A. Samikannu, A.-R. Rautio, K. L. Juhasz, Z. Konya, J. Wärnä, K. Kordas, J.-P. Mikkola, Catalytic hydrogenation of D-Xylose over Ru decorated carbon foam catalyst in SpinChem® rotating bed reactor, *Topincs in Catalysis* 59 (2016) 1165.