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**8<sup>th</sup> Kurt Schwabe Symposium**

# **Book of Abstracts**

**May 27 – 30, 2019, Split, Croatia**

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## Electrochemical approaches in synthesis of high surface area materials

Lidija D. Rafailović<sup>1</sup>, Christoph Gammer<sup>2</sup>, Tomislav Trišović<sup>3</sup>, Bernhard Lutzer<sup>1</sup>, Christian Rentenberger<sup>4</sup>, Aleksandar Z. Jovanović<sup>5</sup>, Igor A. Pašti<sup>5</sup>, H. Peter Karnthaler<sup>4</sup>

<sup>1</sup>CEST, Centre of Electrochemical Surface Technology, Wr. Neustadt, Austria

<sup>2</sup>Erich Schmid Institute of Materials Science, Leoben, Austria

<sup>3</sup>Institute of Technical Sciences of the Serbian Academy of Sciences and Arts, Belgrade, Serbia

<sup>4</sup>University of Vienna, Faculty of Physics, Physics of Nanostructured Materials, Vienna, Austria

<sup>5</sup>University of Belgrade, Faculty of Physical Chemistry, Belgrade, Serbia

[lidija.rafailovic@cest.at](mailto:lidija.rafailovic@cest.at)

It is the aim of our work to carry out fundamental studies on designing and synthesizing high surface area functionalized foam and ordered structures for their potential sensing and energy related applications. We combine electrochemical synthesis with structural studies on different length scales including transmission electron microscopy. Templates are directly grown by electrodeposition, either by hydrogen bubble formation or by utilizing of ordered structures formed by anodic electrochemical oxidation. [1-3] We employed an elegant approach to obtain open, foam deposits of Ni and Ni alloys, by using electrodeposition at high current densities, to promote hydrogen evolution and bubble templating (cf. Fig.1). [1] In the next step, the high surface area of such materials was functionalized by Pd utilizing galvanic displacement reaction. Electrochemical testing of the obtained open foam deposits shows promising catalytical activity for hydrogen evolution in alkaline environments, as well as methanol and ethanol oxidation. In the case of fabrication of nanodendritic Ag simultaneously grown with porous anodic aluminium oxide we accomplished well anchored dendritic Ag nanostructures [2] of long-term stability [3].

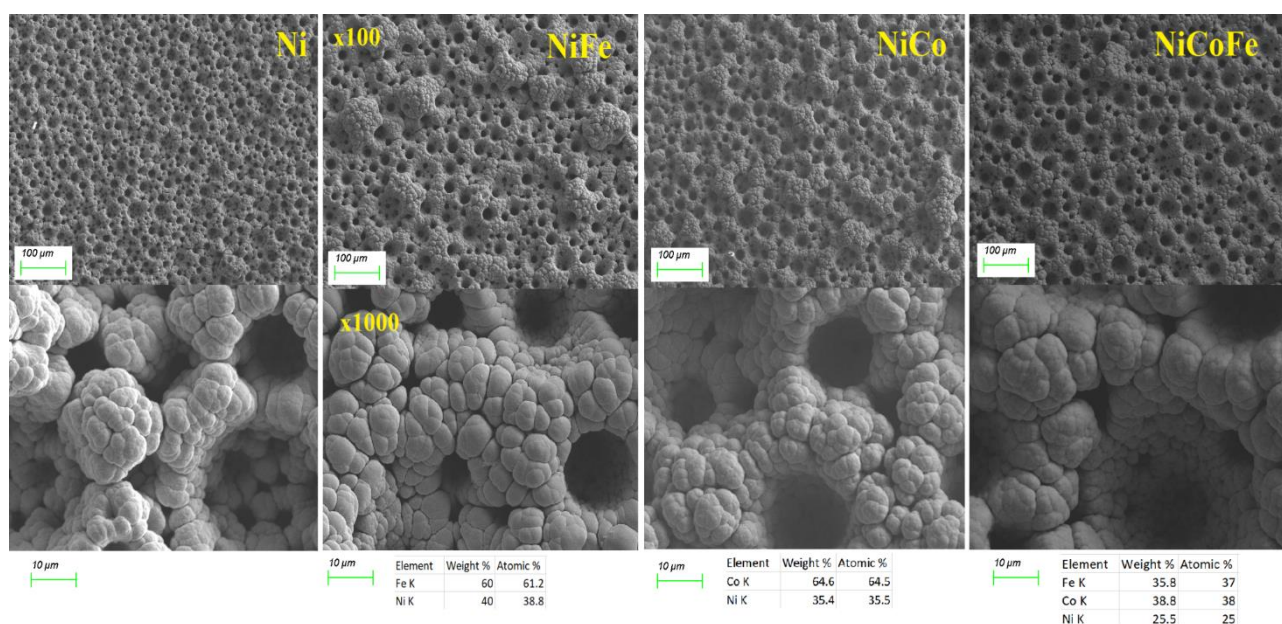


Figure 1. Sem images of high surface area Ni and Ni alloys obtained by dynamic hydrogen template bubble deposition.

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