

## MEETING ABSTRACTS

# TOXICITY OF NANOFIBERS AND NANOPARTICLES OF THE SAME CHEMICAL COMPOSITION

**Jana Báčová<sup>1</sup>, Luděk Hromádko<sup>2,3</sup>, Tomáš Roušar<sup>1</sup>, Jan M. Macak<sup>2,3</sup>**

Presenting author: Jan Macak ([jan.macak@upce.cz](mailto:jan.macak@upce.cz))

<sup>1</sup> Department of Biological and Biochemical Sciences, Faculty of Chemical Technology, University of Pardubice, Studentska 573, 532 10 Pardubice, The Czech Republic

<sup>2</sup> Center of Materials and Nanotechnologies, Faculty of Chemical Technology, University of Pardubice Nam. Cs. Legii, 530 02 Pardubice, The Czech Republic

<sup>3</sup> Central European Institute of Technology, Brno University of Technology, Purkynova 123, 612 00 Brno, The Czech Republic

In this presentation, the first comprehensive toxicity study of Al<sub>2</sub>O<sub>3</sub>, SiO<sub>2</sub>, ZrO<sub>2</sub>, TiO<sub>2</sub> and WO<sub>3</sub> nanofibers effects in cultured epithelial A549 cells will be presented. The nanofibers were produced by centrifugal spinning from suitable spinning solutions and have an average diameter in the sub-micrometer range. At first, we characterized the nanofibers for their morphological, compositional and structural properties. Then, we estimated the biological effects of nanofibers in pulmonary epithelial A549 cells comparing them with biological effects of Al<sub>2</sub>O<sub>3</sub>, SiO<sub>2</sub>, ZrO<sub>2</sub>, TiO<sub>2</sub> and WO<sub>3</sub> nanoparticles. Multiwalled carbon nanotubes (MWCNT) were used as a positive control. The cells were treated with 1, 10 and 100 µg.mL<sup>-1</sup> concentrations of a nanomaterial for 24 and 48 h. The dehydrogenase activity and glutathione levels were determined in cells as markers of cell injury. Experimental details and results of these investigations will be presented and discussed (1).

*Keywords: fibers; nanoparticles; toxicity; A549 cells*

## References

1. J. Bacova, L. Hromadko, T. Rousar, J.M Macak et al., Ms submitted