

**VII INTERNATIONAL CONFERENCE ON  
MECHANOCHEMISTRY  
AND MECHANICAL ALLOYING**

**INCOME 2011**

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**THE MECHANOCHEMICAL TREATMENT OF  $V_2O_5/(NH_4)_2Mo_2O_7$  MIXTURE**N. Lytvyn<sup>1</sup>, V. Zazhigalov<sup>1</sup>, K. Wieczorek-Ciurowa<sup>2</sup>

<sup>1</sup>*Institute for Sorption and Problems of Endoecology, National Academy of Sciences of Ukraine, Kiev, Ukraine,* <sup>2</sup>*Faculty of Chemical Engineering and Technology, Cracow University of Technology, Cracow, Poland*

The mechanochemical treatment of  $V_2O_5/(NH_4)_2Mo_2O_7$  (ADM) mixture was studied for the first time. It was found that dry treatment brings about partial decomposition of ADM with formation of  $Mo_9O_{26}$  without changes in  $V_2O_5$  phase. The milling in ethanol leads to formation of  $Mo_9O_{26}$  and  $MoO_{2.8}$  phases as well as to anisotropic deformation of  $V_2O_5$  with increase of basal plane content. The milling in water causes two types of changes. At the short-time treatment the formation of  $Mo_9O_{26}$ ,  $MoO_{2.8}$ ,  $\chi$ - $Mo_8O_{23}$  and  $V_2O_5 \cdot nH_2O$  took place. The elongation of milling time leads to reaction between  $V_2O_5 \cdot nH_2O$  and  $NH_3$  with formation of  $(NH_4)_2V_6O_{16} \cdot 2H_2O$  and hydration of molybdenum suboxides to  $HMoO_3 \cdot 2H_2O$ . It was found that the samples containing molybdenum suboxide mixture and  $V_2O_5 \cdot nH_2O$  show high selectivity to propylene in oxidative dehydrogenation of propane.

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**SPECTRAL AND MECHANICAL PROPERTIES OF THE MATERIALS STRUCTURED WITH CARBON NANOTUBES**N.V. Kamanina<sup>1</sup>, D.N. Timonin<sup>1</sup>, P.V. Kuzhakov<sup>1</sup>,A.A. Artukh<sup>2</sup>, L.A. Chernozatonskii<sup>2</sup>, D.P. Uskoković<sup>3</sup><sup>1</sup>*Vavilov State Optical Institute, St.-Petersburg, Russia*<sup>2</sup>*Emanuel Institute of Biochemical Physics, Russian Academy of Sciences, Moscow, Russia*<sup>3</sup>*Institute of Technical Sciences of SASA, Belgrade, Serbia*

Carbon nanotubes are considered as the good candidate to modify the surface properties of the organic and inorganic structures. Both the spectral and mechanical properties as well as quantum chemical simulation are discussed to explain the increase in transmission and hardness of the nanostructured polyvinyl alcohol films, magnesium fluoride, etc. The basic features of carbon nanotubes are regarded to their small refractive index, strong hardness of C—C bonds as well as complicated and unique mechanisms of charge carrier moving. The structures of the composite films and their mechanical properties are modeled too. The peculiarities of new nanostructured materials and their possible optoelectronics and display applications will be under consideration. The results have been supported by RFBR grant #10-03-00916 and RAS Presidium Program # 21.