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PROJECTS

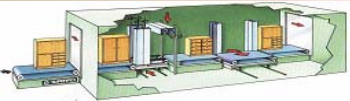
ADVANCED MANUFACTURING TECHNOLOGIES FOR SPECIFIC NANOMATERIALS DEDICATED TO LIGNO-CELLULOSE COMPOSITE USED IN FURNITURE INDUSTRY FINISHING PROCESSES APPLICATIONS (FINAMAT)

PARTENERS:

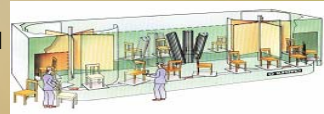
- ✓ NATIONAL INSTITUTE OF WOOD – BUCHAREST
- ✓ R&D INSTITUTE FOR NONFERROUS AND RARE METALS – BUCHAREST
- ✓ VALAHIA UNIVERSITY OF TARGOVISTE

AN OCTOBER 2005- SEPTEMBER 2008 PROJECT

The main aim of the project is to develop new technologies for ligno-cellulose composites finishing, by totally replacing the organic solvents with nanomaterials with controlled properties.



In accordance with the European direction no. 13/1999 it is required to reduce the volatile organic compounds (VOC) emissions.



In furniture industry, the use of VOC in the final step is common. According with the necessity to find new solutions for reducing the solvent emissions, the tendency is to develop new technologies for ligno-cellulose composites finishing, by totally replacing the organic solvents and use nanomaterials with controlled properties.

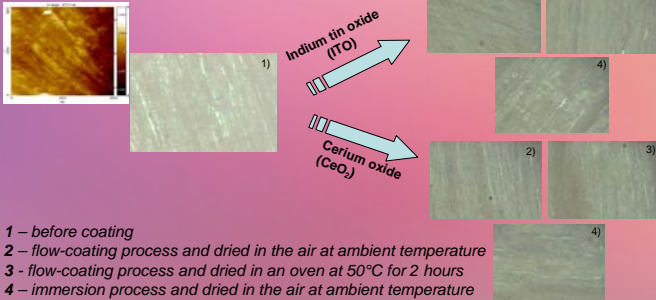
RESULTS

The technological experiments are focused to obtained sol-gel coating materials, easy to use for furniture technological applications, and by waterproofing properties turn into easy-to-clean, dirty repellent materials.

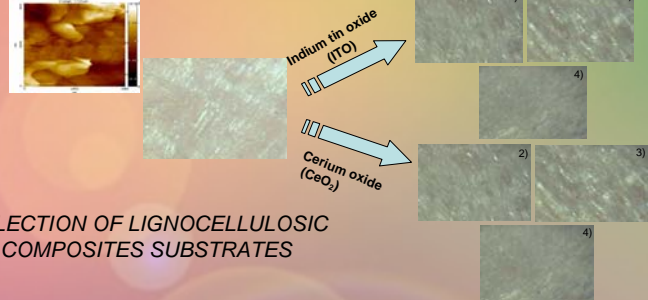
The oxides obtained by sol-gel method, were deposited by immersion and flow-coating process on the composites substrates.

COMPATIBILITY BETWEEN NANOMATERIALS AND LIGNOCELLULOSIC COMPOSITES

Beech tree substrate



Birch tree substrate



SELECTION OF LIGNOCELLULOSIC COMPOSITES SUBSTRATES

- From the analytical interpretation of the compatibility between the ligno-cellulose plates and the finishing materials proposed we can conclude that:
- ✓ the penetration and the diffusion depths of the covering substances are strongly influenced by the wood type;
 - ✓ the adsorption of the finishing products depends in a large measure on the proportion between alburnum and heartwood.

ADVANCED NANOCOMPOSITES MATERIALS USED IN CIVIL CONSTRUCTIONS WITH ANTIBACTERIAL, SELF-CLEANING PROPERTIES AND SOLAR ENERGY CONCENTRATORS INTEGRATED STRUCTURES FOR AMBIENTAL IMPROVEMENT (NANOAMBIENT)

LARGE CONSORTIUM COVERING 7 FROM 8 ROMANIAN EUROREGION

- ✓ 6 R&D INSTITUTES (3 NATIONAL R&D INSTITUTES- NONFERROUS AND RARE METALS – BUCHAREST, CONDENSED MATTER – TIMISOARA, ANALYTICAL INSTRUMENTATION-CLUJ and 3 PRIVATE R&D INSTITUTES- INSTITUTE OF WOOD – BUCHAREST, CEPROCIM-BUCHAREST, AUXILIARY ORGANICS PRODUCTS – MEDIAS)
- ✓ 4 UNIVERSITIES (POLITEHNICA OF BUCHAREST, "ALEXANDRU IOAN CUZA" - IASI, "OVIDIUS" – CONSTANTA, VALAHIA UNIVERSITY - TARGOVISTE)

The major aim of the project is to obtain „intelligent walls” i.e. new construction materials for walls structure (using cement and wood and composites bonding agent materials) and new materials (nanocomposites and integrated structures) for surface of the wall in order to obtain antibacterial and selfcleaning properties and to incorporate solar energy concentrators.

AN OCTOBER 2005- SEPTEMBER 2008 PROJECT