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BIOENGINEERING IN THE XXIST CENTURY: THE ROLE OF NANOTECHNOLOGY

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A brief historical overview of bioengineering as an independent discipline will be offered, emphasizing the role of f different technical breakdowns, such as semiconductors, liquid crystals, etc. Then, the main challenges, that this very active are of R&D faces, will be discussed. The role that Nanotechnology can play as the next generation of bioengineered devices will be analyzed, through some actual examples, ranging from drug delivery technologies to MEMS (Micro ElectroMechanical Systems)

CATALYTIC COMPLEXES IN THE PETROLEUM RESINS SYNTHESIS PROCESSES. USING. PROPERTIES

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Utilization of petrochemical processes wastes, transformation of wastes components in new synthetic compounds has been investigated. As is

know liquid products of pyrolysis processes there are wastes of petrochemistry. This by-products contain aliphatic compounds, cyclic diolefins, monoolefins and aromatic compounds. Monomers are raw materials for the production of aliphatic, aromatic and copolymer petroleum resins.

Basic directions of researches:

- Catalytic olygomerization of factions C_5, C_9 monomers. The C_5 fraction generally contain the following hydrocarbons: isoprene, cis- and trans- piperylene, cyclopentadiene, dicyclopentadiene as codimer of cyclopentadiene (DCPD), 1-pentene, 1-methyl-1-butene. The C_9 fraction contain such unsaturated monomers: xylene, styrene, ethyl - toluene, DCPD.
- Creation of the catalytic systems on the basis of accessible industrial catalysts. The obtainment of the multicomponent catalytic systems. The Friedel–Crafts catalysts to be used in the polymerization of the present process. The activity of Friedel–Crafts catalysts is usually attributed to the formation of strong complex acids, $HCl + AlCl_3 = H^+AlCl_4^-$, or to ionization of the alkyl halides, $RCl + AlCl_3 = R^+ AlCl_4^-$. For several years we have been studing interaction of aluminium chloride with hydrogene chloride, eters, esters, alcohols and aromatic hydrocarbons in order to attain a better understanding of these catalysts. The following catalysts has been studed:
    - $AlCl_3$*HCl;
    - $AlCl_3$*C_2H_5OH;
    - $AlCl_3$*$C_6H_5CH_3$*H_2O;
    - $AlCl_3$:C_2H_5-O-C(O)-CH_3 :$C_6H_4(CH_3)_2$;
    - $AlCl_3$:CH_3-$(CH_2)_3$- O-C(O)-CH_3:$C_6H_4(CH_3)_2$;
    - $AlCl_3$:CH_3-$(CH_2)_3$- O-C(O)-CH_2-CH_3:$C_6H_4(CH_3)_2$;
    - $AlCl_3$:CH_3-$(CH_2)_3$- O-C(O)-$(CH_2)_{16}$-CH_3:$C_6H_4(CH_3)_2$;
    - $AlCl_3$:C_2H_5-O-C(O)- $(CH_2)_4$-CH_3:$C_6H_4(CH_3)_2$;
    - $AlCl_3$:CH_2=CH-O-C(O)-CH_3: $C_6H_4(CH_3)_2$;
    - $AlCl_3$:CH_2=CH-CH_2-O-C(O)-CH_3: $C_6H_4(CH_3)_2$.