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ATTI DEL CONGRESSO

INO-PO-49

Synthesis and characterization of kaolinite-organic nanohybrid materials

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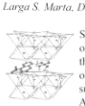

Surface modifications of clays allow the creation of new materials with innovative applications, thanks to the chemical and mechanical stability of these minerals and to the variety of their surface and structural properties.

Although kaolinite is widely abundant in nature and is characterized by a very high density of hydroxyl groups compared with other clay minerals, its interlayer chemistry is not yet very developed [1]. In this work we report the synthesis of a novel nanohybrid material, prepared by functionalization of the interlayer space of kaolinite previously intercalated with dimethylsulfoxide. The method consisted, in a first step, to covalently graft the molecule of tris-(hydroxymethyl)-aminomethane on the interlayer surface aluminols of kaolinite, by the formation of Al–O–C bonds. The grafted material was then further functionalized by reaction of the free amino-groups with a dye molecule, dansyl chloride [2]. The material was characterized by X-ray powder diffraction, thermogravimetry, infrared spectroscopy, emission spectrochemical fluorescence analysis.

1. Tunney J.J, Detellier C., *Can. J. Chem.* **1997**, *75*, 1766. 2. Kurita K., *Chem. Ind. Apr.* **1974**, 20, 345.

INO-PO-50

Pt(II) complex anchored to CCK8 peptide as target selective cytotoxic agent toward tumor cells.

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Cis platinum and related species are currently used in the treatment of a large number of solid tumors[1]. For poor ability to select between malignant and normal cells the effectiveness of their clinical use is thwarted for the severe side effect. Many efforts have been devoted to reduce systemic toxicity addressing selectively this drug[2]. Here we report on a Pt(II)-CCK8 peptide conjugate in which a diamino platinum complex is anchored to the N-terminus of CCK8 peptide. This bioactive molecule is capable to drive the cytotoxic agent on tumor cells overexpressing cholecystokinin receptors in a wide number of cancer[3]. The product is synthesized by solid phase synthesis following a Fmoc strategy and purified by crystallization. The chemical physical characterization is carried out by ^{1}H NMR and mass spectrometry. Cytotoxic assays are carrying out on tumour cells to confirm the in vitro target selectivity of the Pt(II)-CCK8 peptide conjugate.

1. B. Lippert (Ed.), *Cisplatin. Chemistry and Biochemistry of a Leading Anticancer Drug*, Wiley–VCH, Weinheim, 1999. 2. van Zutphen, S.; Reedijk, J. Coord. Chem. Rev. **2005**, *249*, 2845–2853. 3. Reubi, J.C.; Schaer, J.C.; Waser B. *Cancer Research* **1997**, *57*, 1377-1386.

INO-PO-51

Novel Pd and Cu based metallomesogens from thiophene containing ligands

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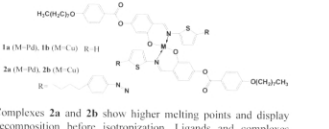
LC complexes from heterocyclic containing ligands are relatively rare[1]. Here we present two new thiophene based nematic ligands as chelating molecules in four new symmetrically substituted metallomesogens. Complexes **1a** and **1b** are nematic, with wider LC stability range in the case of **1a** for the planarity of the Pd coordination geometry.



Complexes **2a** and **2b** show higher melting points and display decomposition before isotropization. Ligands and complexes have been characterized both thermically and spectroscopically. In particular, useful informations about ligand **2** and complex **1a** were obtained by X-ray technique.

1. Liao C-T., Wang Y-J., Huang C-S., Sheu H-S., Lee G-H., Lai C. K., Tetrahedron, 2007, 63, 12437-12445.

INO-PO-52

Polymeric nanobeads for bioactive molecules encapsulation

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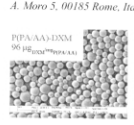

Polymeric nanospheres for loading and release of drugs and bioactive molecules, such as cell growth factor dexamethasone (DXM), envisage a promising approach for applications in nanomedicine and catalysis [1-3]. In the present study polymeric nanospherical formulation was achieved for the encapsulation and release studies of DXM. Nanospheres of polymetylmathacrylate (PMMA), polyphenylacetylene (PPA) and related copolymers with acrylic acid (AA) or N,N-dimethylpropargylamine (DMPA), were prepared by using emulsion polymerization in the presence of DXM. In order to optimize the nanoparticle monodispersion and loading capability of DXM, several experimental parameters were investigated. The effective DXM loading and subsequently release were determined by HPLC-UV measurements.

1. Farokhzad O. C., Langer R., ACS NANO **2009**, *3*(1) 16–20
2. Palocci, C.; Chronopoulou, L.; Venditti, I.; Cernia, E.; Diociaiuti, M.; Fratoddi, I.; Russo, MV. *Biomacromol.*, **2007**, 8(10), 3047-3053
3. Venditti, I.; Fratoddi, I.; Russo, MV.; Bellucci, S.; Crescenzo, R.; Iozzino, L.; Staiano, M.; Aurilia, V.; Varriale, A.; Rossi, M.; D'Auria, S.; *J. Phys. Condensed Matter* **2008**, *20(47)*, 474202/1-474202/3