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### **Synthesis, characterization and application of mesoporous silicas SBA-15 and its hybrid containing Glycidyl Methacrylate organo-bridge for the controlled release of ibuprofen and mesalamine drugs in biological fluids**

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Mesoporous silica SBA-15 was synthesized and immobilized with bridged polysilsesquioxane monomers obtained by the reaction of 3-aminopropyltriethoxy silane with glycidyl methacrylate in 2:1 ratio. The synthesized mesoporous silica materials were characterized by elemental analysis, infrared spectroscopy, nuclear magnetic resonance spectroscopy, nitrogen adsorption, X-rays diffraction, thermogravimetry and scanning electron microscopy. The nuclear magnetic resonance in the solid state is in agreement with the sequence of carbon distributed in the attached organic chains, as expected for the organically functionalized mesoporous silica. After functionalization with organic bridges the BET surface area was reduced from 1311.80 to 494.2 m<sup>2</sup>g<sup>-1</sup> and pore volume reduced from 1.98 to 0.89 cm<sup>3</sup>g<sup>-1</sup>, when compared to the original precursor silica. The incorporation of organic groups onto the silica surface increased the drug loading capacity and also demonstrated controlled release of ibuprofen and mesalamine drug in biological fluids. To investigate the release rate and mechanism from the synthesized silicas, zero-order, first-order, Higuchi, Hixson-Crowell and Peppas and Korsmeyer-Peppas kinetic models were applied. The results suggest that the organo-functionalized hybrid silica could be a simple, efficient, inexpensive and convenient host for the controlled release of drugs.

#### **Biography**

Fozia Rehman completed her Doctorate in 2014, in the field of Inorganic Chemistry from the Institute of chemistry, University of Campinas (UNICAMP), São Paulo, Brazil. She was awarded scholarship from "The world Academy of Sciences", Italy and National Council of Research and Development (CNPq), Brazil to pursue her PhD studies in Brazil. Currently, she is working on synthesis and modification of silica nanoparticles for the application in drug delivery, removal of heavy metal and organic pollutants from water. She also worked in collaboration on a joint research project of UNICAMP and UCL-School of Pharmacy. She has presented her research work in various national/ International conferences and she has published her work in reputed journals with high impact factors. She participated in International conference and Expo on materials Science and Engineering, Chicago-2012 and her work has been published in the proceedings of *Materials Science and Engineering Journal*. Vol. 1, issue 3, Oct, 2012.

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