

## **Sol-gel synthesis, thermal characterization, surface interactions and release of Silica/drug hybrids system**

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### **Abstract.**

Local drug release in the implant material for medical applications appears to be a very interesting alternative to systemic therapy. The possibility of introducing drug release systems into the implant site has been widely studied and used.

The aim of this work is synthesized by sol- gel process a system composed by SiO<sub>2</sub> glass and ketoprofen, anti-inflammatory drug. Two percentage of drug (5 and 15wt%) were entrapped in Silica matrix via sol-gel method and dried materials were analysed through Fourier transformed infrared spectroscopy (FTIR), simultaneous DSC/TGA analysis. The drug loaded amorphous bioactive materials were studied in terms of their drug release kinetics. A theoretical study based on Molecular Mechanics and Molecular Dynamics methods is a work in progress to investigate possible surface interactions between the silica-based surface and the ketoprofen drug molecules both at small and higher concentration for useful comparison with experimental data.