Supplementary Data for: Understanding controlled drug release from mesoporous silicates: Theory and Experiment

T. Ukmar[a], U. Maver[a], O. Planinšek[b], V. Kaučič[a,c], M. Gaberšček[a,c], A. Godec[a,*]

[a] *National Institute of Chemistry, Ljubljana, Slovenia*
[b] *Faculty of Pharmacy, University of Ljubljana, Ljubljana, Slovenia*
[c] *Faculty of Chemistry and Chemical Technology, University of Ljubljana, Ljubljana, Slovenia*

Supplementary 1: Quantification of drug loading

The loading fraction is determined on the basis of weight loss during the combustion of IMC. This weight loss region is, of course, accompanied by an exothermal transition in the corresponding DSC curves. The temperature interval is determined on the basis of the derivative of the weight loss with respect to temperature and is shown in Fig. 1. The first two weight loss stages, accompanied by endothermal regions in DSC curves, are due to the removal of remaining solvents. The third and most prominent weight loss stage is due to combustion of IMC. The weight loss due to the dehydroxylation of the surface was determined from the TGA curves of bare silicates, respectively, and subtracted from the total weight loss of the loaded samples.

*Corresponding author
Email address: aljaz.godec@ki.si (A. Godec)

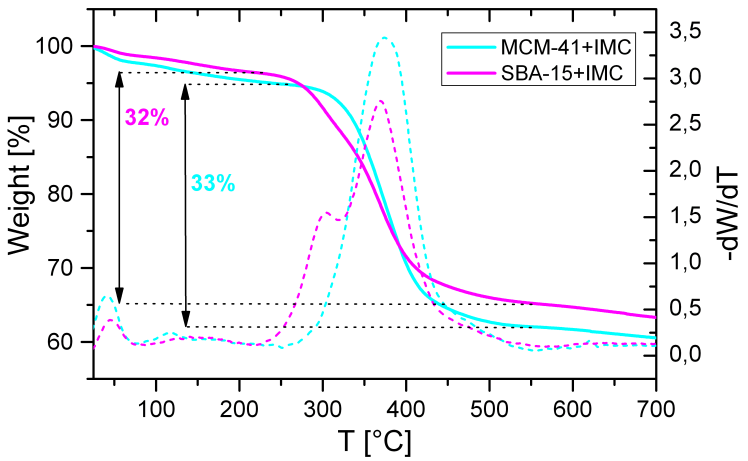

Figure 1: TGA curves and the first derivative of weight with respect to temperature for IMC loaded SBA-15 and MCM-41.

Supplementary 2: UV-VIS spectra of aqueous solutions of THF, IMC and THF+IMC

Since the prepared samples contain traces of THF, we chose the wavelength 268 nm for the determination of concentration. At this wavelength the THF absorption does not interfere with IMC absorption. We prepared aqueous solutions of THF with and in absence of IMC, where the THF concentration is 410 times larger than the maximal concentration that can be achieved during drug release. The latter is determined from the first weight weight loss stages. The UV-VIS spectra are shown in Fig. 2.

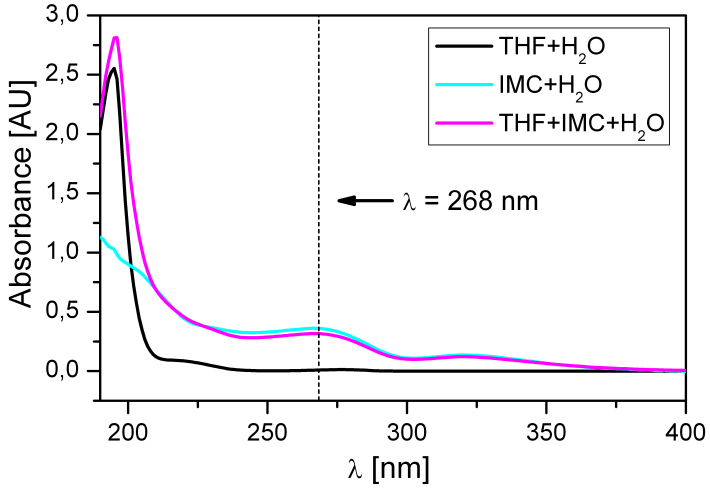

Figure 2: UV-VIS spectra of aqueous solutions of THF, IMC and THF+IMC.