Step-up synthesis of amidoxime-functionalised periodic mesoporous organosilicas with amphoteric ligand in the framework for drug delivery

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Determination of drug loading into the mesoporous materials by thermogravimetric analysis (TGA)

The loading weight percentage (W) of IBU and 5-FU in DU-PMAs was determined by thermogravimetric analysis as follows;

Fig. 8 shows three profiles of blank DU-PMA, IBU or 5-FU loaded DU-PMA, and blank IBU or 5-FU. The drug loading weight ratio (W) in the DU-PMA materials can be calculated by the equation.

\[
\frac{B - W_1}{100 - B} = \frac{T - W - W_2}{100 - T}
\]

where W1 and W2 represent the percentage weight loss of physically adsorbed water (< 100 °C) in the blank DU-PMA and IBU or 5-FU loaded DU-PMA, respectively. B is the percentage weight loss corresponding to the adsorption of water, and organic content of blank DU-PMA samples and T represents the total weight loss percentage of adsorbed water and organic content of the framework, and IBU or 5-FU loaded in DU-PMA samples.
Figure S1. $^1$H NMR spectrum of 1,2-diureylenemaleonitrile precursor in CDCl$_3$. 
**Figure S2.** $^{13}$C NMR spectrum of 1,2-diureylenemaleonitrile precursor in CDCl$_3$. 
Figure S3. FT-IR spectrum of 1,2-diureylene maleonitrile precursor.
Figure S4. TGA curves of (a) DUMN-PMO-5 and (b) DUMN-PMO-40.
Figure S5. (A) XRD patterns, (B) N$_2$ adsorption-desorption isotherms, (C) Pore size distributions and (D) FT-IR spectra for DU-PMA-5 and DU-PMA-20.
Figure S6. $^{29}$Si MAS NMR spectrum of DU-PMA-20.
Figure S7. $^{13}$C CP MAS NMR spectrum of DU-PMA-20.
Figure S8. Zeta potential vs pH plot of DU-PMA samples.