

Supplementary Information

Journal of Sciences, Islamic Republic of Iran

The Effect of Silica Coating on the Drug Release Profile and Biocompatibility of Nano-MOF-5

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Synthesis of MOF-5 NPs.

Coating of NMOFs@drugs with silica.

Figure S1. Calibration scheme of standard ibuprofen in PBS.

Figure S2. Calibration scheme of standard acetaminophen in PBS.

Figure S3. FT-IR spectra of NMOF-5 (a), NMOF-5@acetaminophen (b), and NMOF-5@ibuprofen (c).

Figure S4. FT-IR spectra of NMOF-5@acetaminophen@silica (bottom), NMOF-5@ibuprofen@silica (top).

Figure S5. Nitrogen isotherm of NMOF-5@acetaminophen@silica, NMOF-5@ibuprofen@silica.

Synthesis of MOF-5 NPs:

Zn(NO₃)₂·6H₂O (1.80 g, 0.6 mmol) and H₂BDC (0.45 g, 0.3 mmol) were dissolved in DMF (60 mL). After adding triethylamine (3.30 mL), this mixture was placed under ultrasonic irradiation for 1 h. The NMOFs were isolated via centrifuge at 4000 rpm for 3 min. They were washed with DMF (2×12) and CH₂Cl₂ (2×12). NMOFs are activated by dichloromethane three times in three days followed by heating at 120 °C for 6 h.

Coating of NMOFs@drugs with silica:

NMOF-5@ibuprofen and NMOF-5@acetaminophen (0.80 g) were dispersed in NH_3 solution in ethanol (200 mL, 0.2 M), separately. TEOS (0.32 mL) was added to each of the dispersions under stirring at room temperature. After 5 h, nanoparticles were isolated by centrifuging at 3000 rpm for 5 min, washed with ethanol (1×5).

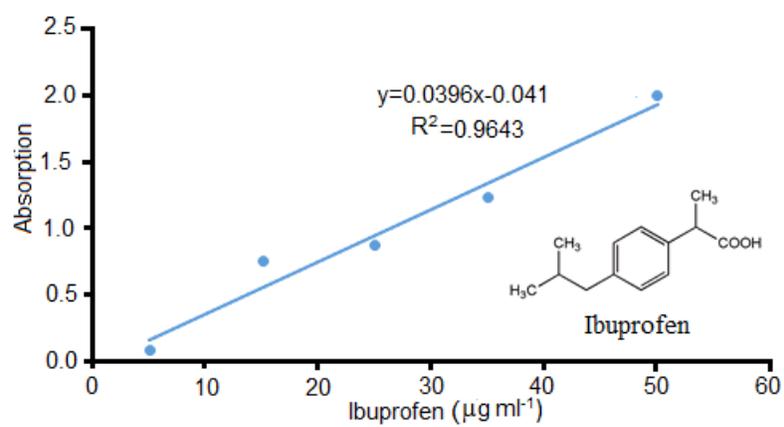


Figure S1. Calibration scheme of standard ibuprofen in PBS

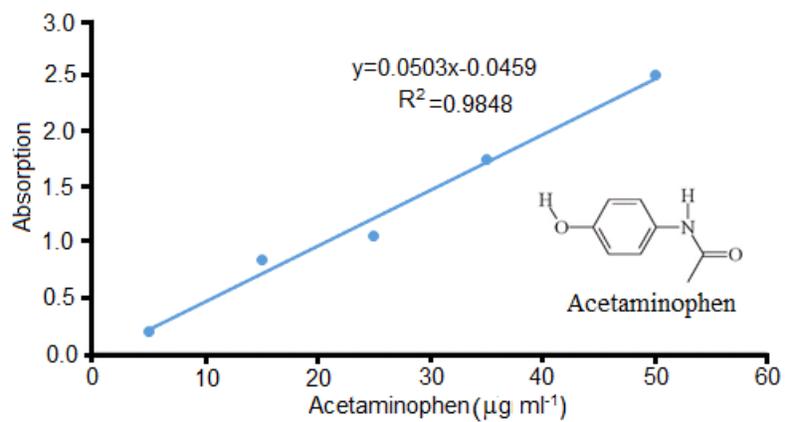


Figure S2. Calibration scheme of standard acetaminophen in PBS

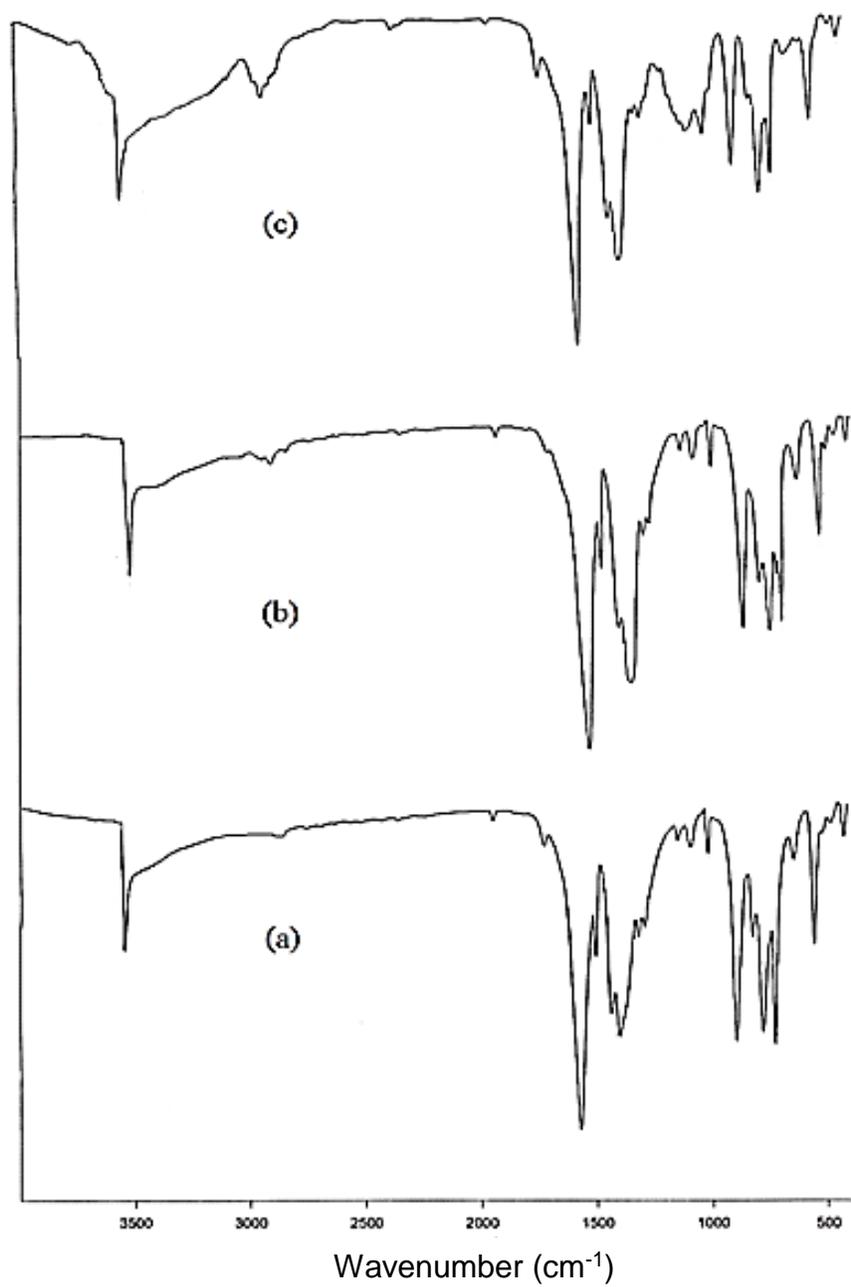


Figure S3. FT-IR spectra of NMOF-5 (a), NMOF-5@acetaminophen (b), and NMOF-5@ibuprofen (c)

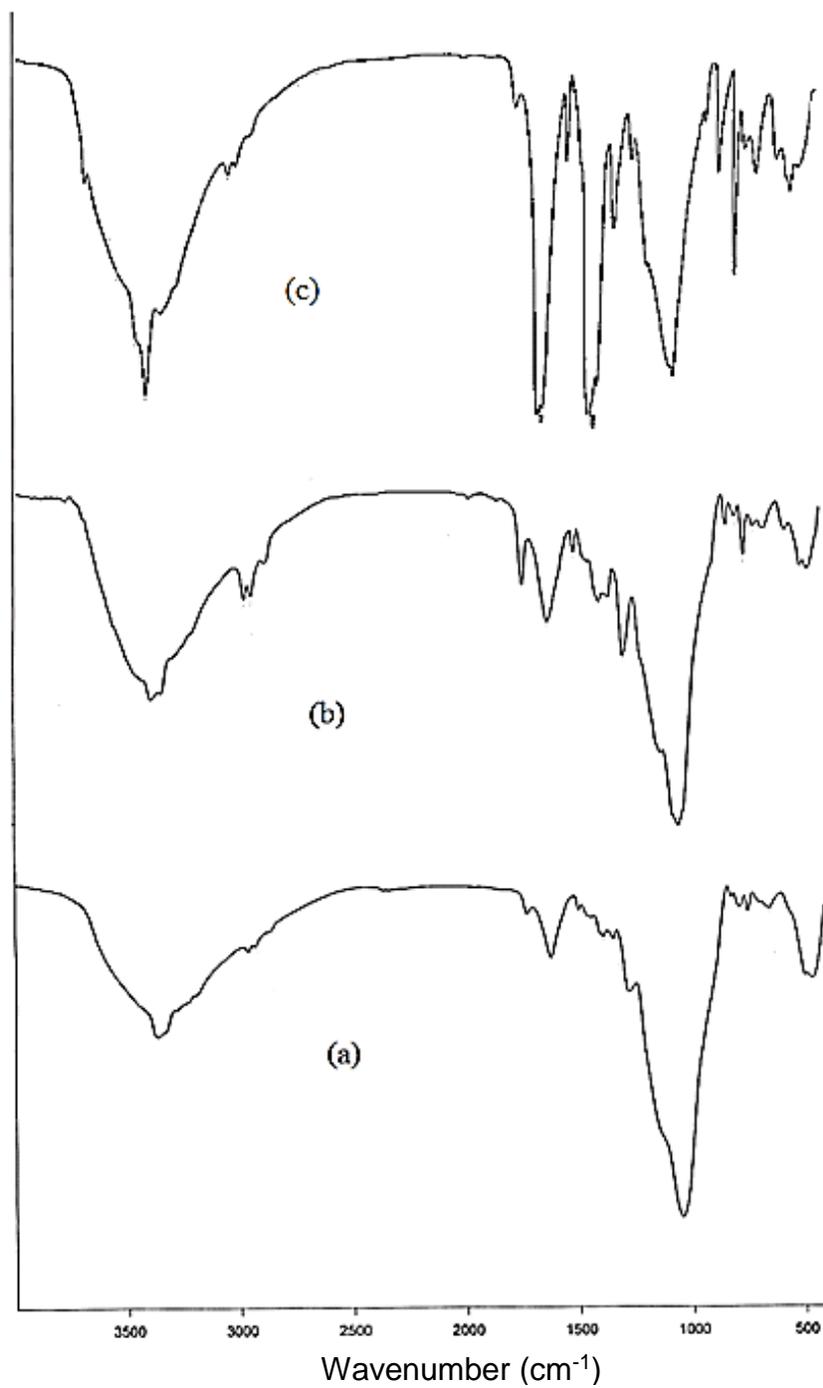


Figure S4. FT-IR spectra of NMOF-5@acetaminophen@silica (a), NMOF-5@ibuprofen@silica (b), NMOF-5@silica (c)

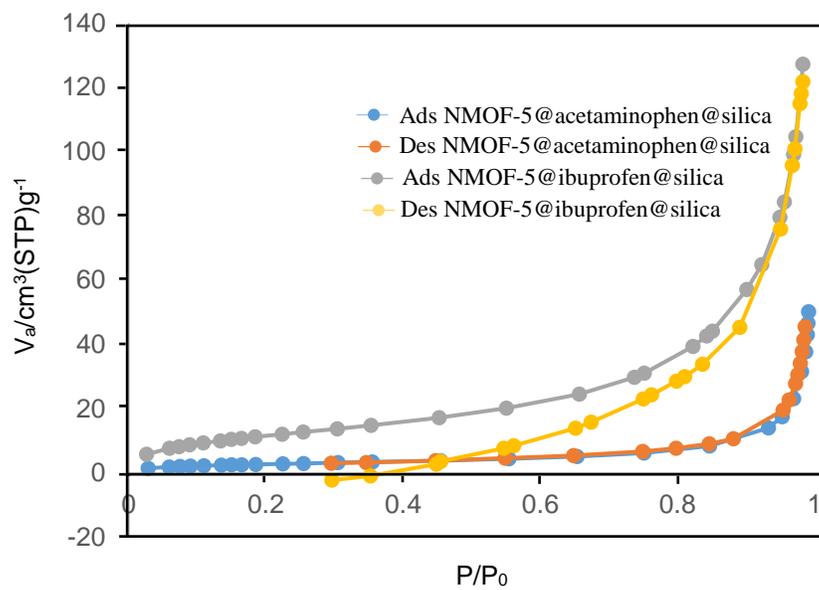


Figure S5. Nitrogen isotherm of NMOF-5@acetaminophen@silica, NMOF-5@ibuprofen@silica.