Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics.

Table 1s

RNase A-MCM41

Element	Weight%	Atomic%
C K	56.47	66.25
O K	31.43	27.68
Si K	11.97	6.01
S K	0.13	0.06

bare MCM41

Element	Weight%	Atomic%
C K	43.86	55.51
O K	34.47	32.76
Si K	21.67	11.73

Table 1s. Energy dispersive X-ray analysis confirm enzyme adsorption. Results of MCM41 with RNase A adsorbed (left) and MCM41 only (right) show sulfur is present only in the first sample arising from cysteine residues in RNase A bound to the surface of MCM41.

Figure 1s

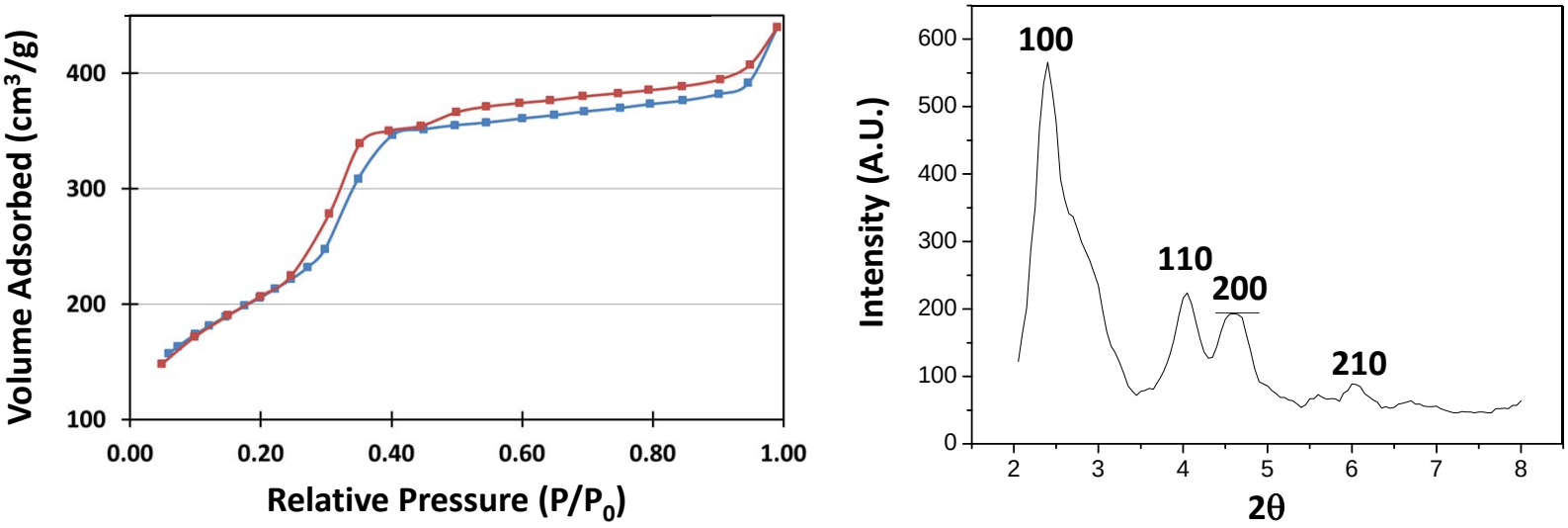

Figure 1s. (left) N_2 gas adsorption/desorption isotherms of MCM41. Surface area and pore dimensions are given in the table below. (right) low angle XRD data of MCM41 with typical reflections due to nanometric periodicity.

	Surface area (m^2/g)	Pore diameter (Å)	Pore Volume (cc/g)
MCM41	**765.0**	**34**	**1.23**

Figure 2s

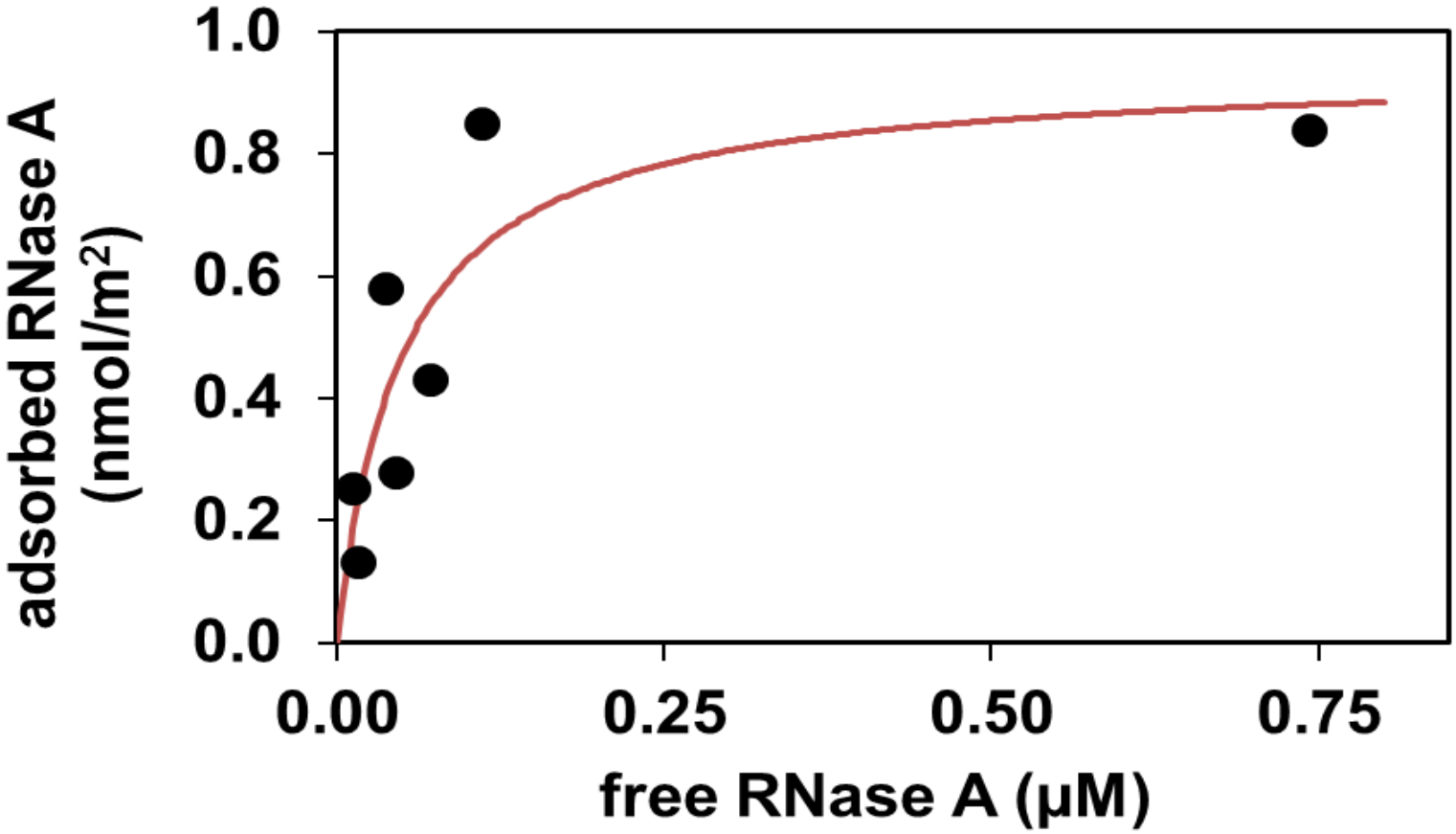

Figure 2s. Adsorption isotherm of RNase A added to a suspension of 2.5 mg/ml MCM41 in acetate buffer (filled circles) fitted with a Langmuir model (solid line).

Figure 3s

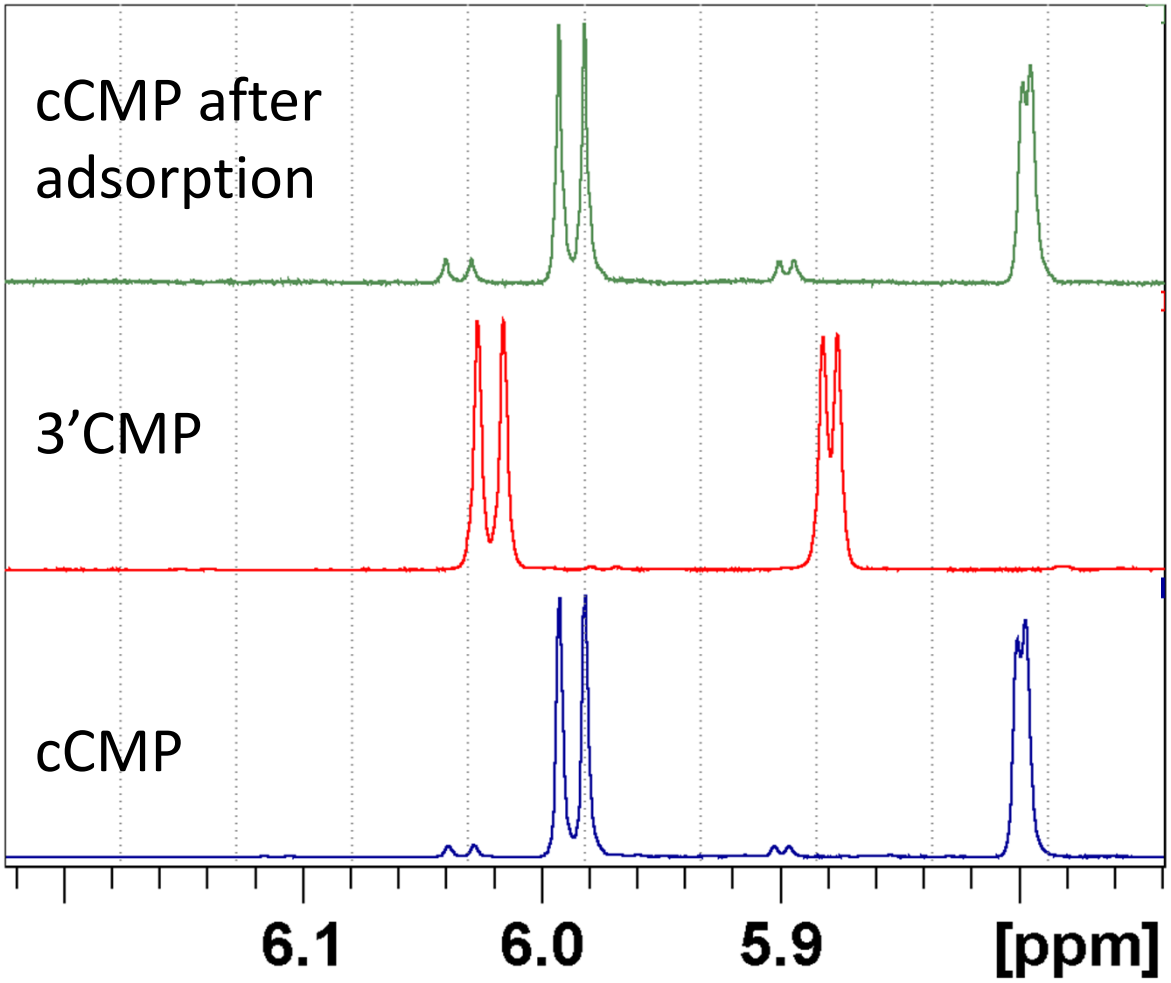

Figure 3s. ^{1}H NMR spectrum of cCMP (blue), 3’CMP (red) and cCMP following adsorption to MCM41 (green), showing that cCMP adsorption to MCM41 does not catalyze the hydrolysis.

Figure 4s

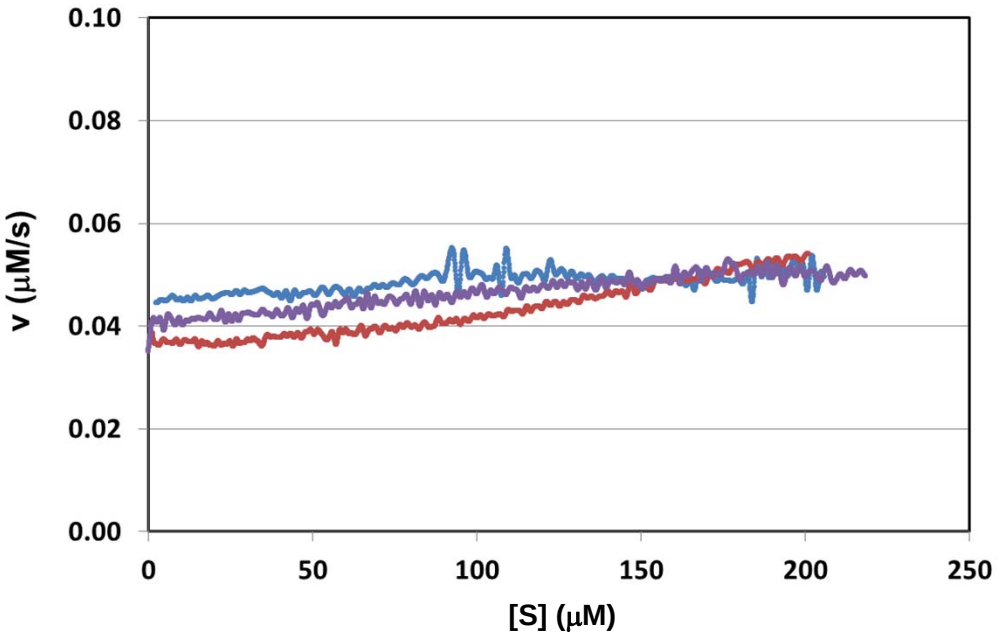

Figure 4s. Temperature dependent single injection data of Rnase A adsorbed on MCM41 after conversion to rate versus substrate concentration recorded at 25 °C (blue), 30 °C (red) and 37 °C (purple).