Electronic Supplementary Material (ESI) for Analyst.

Supporting Information

S-1, SEM analysis

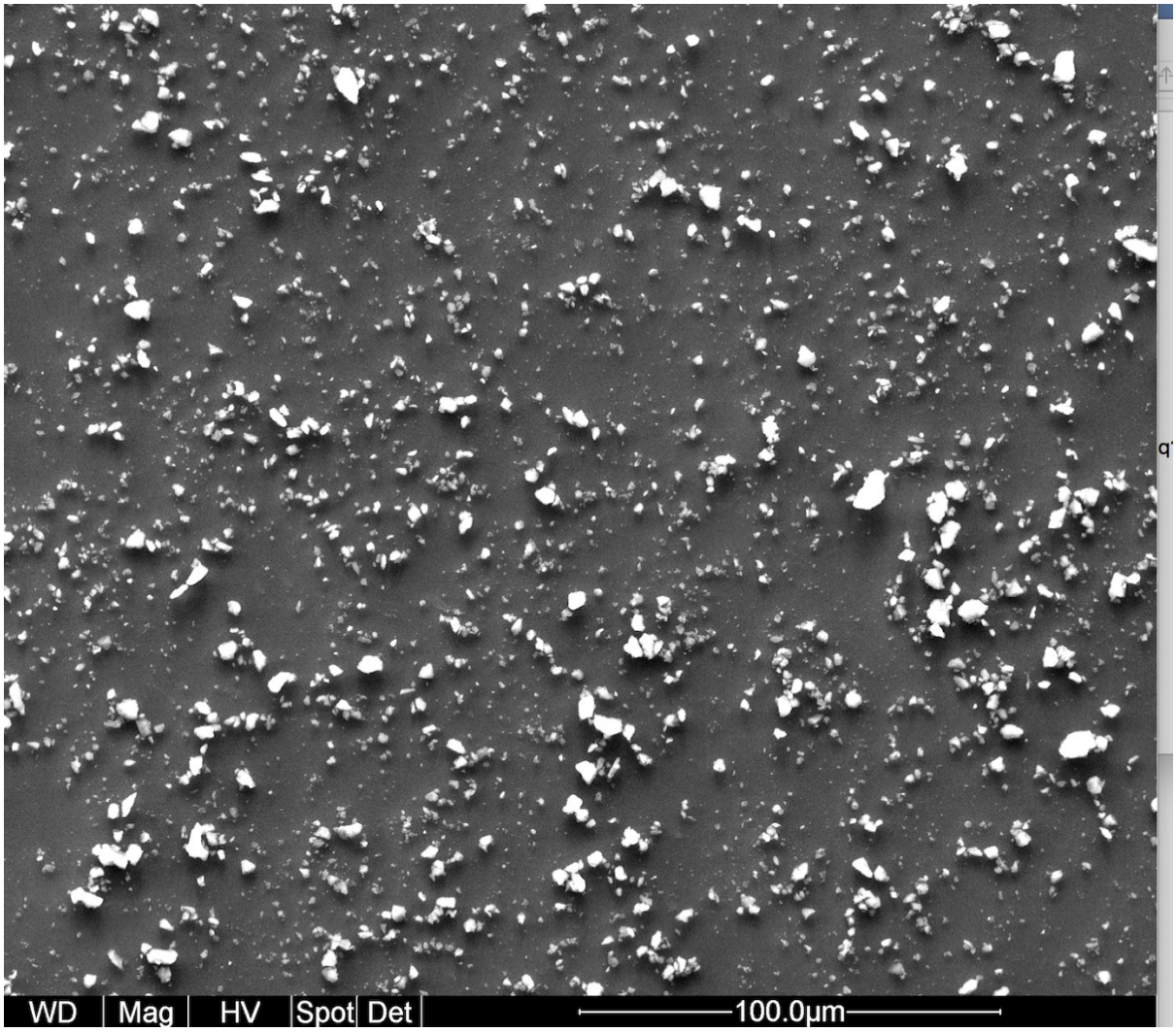


Figure S-1. The particle size distribution was determined by Scanning Electron Microscopy (SEM) analysis with a Supra 40VP Field Emission SEM from Carl Zeiss Ltd (Oberkochen, Germany).

Supporting Information 2, TGA Curve

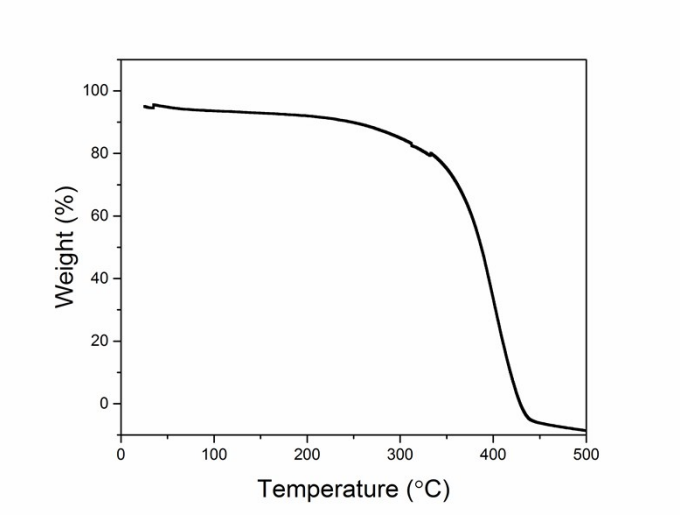


Figure S-2. A TGA curve was measured that showed stability of the polymers until 250˚C, after which a notable decrease in mass was observed.

Supporting Information 3, HPLC analysis of all MXP isomers

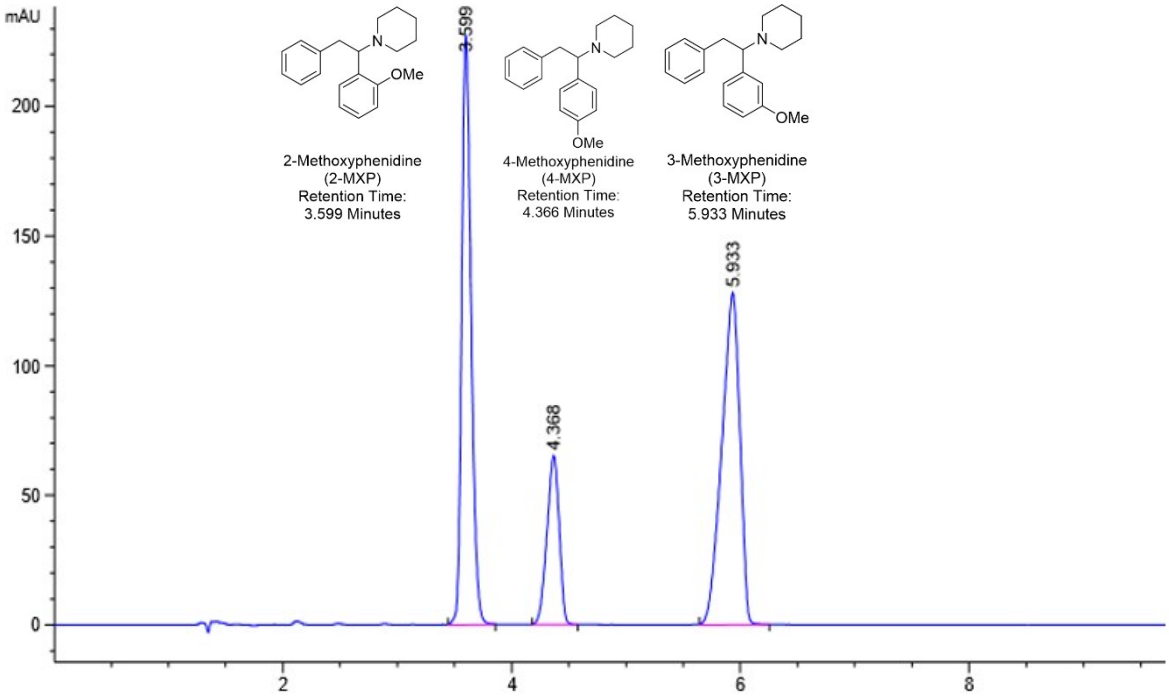
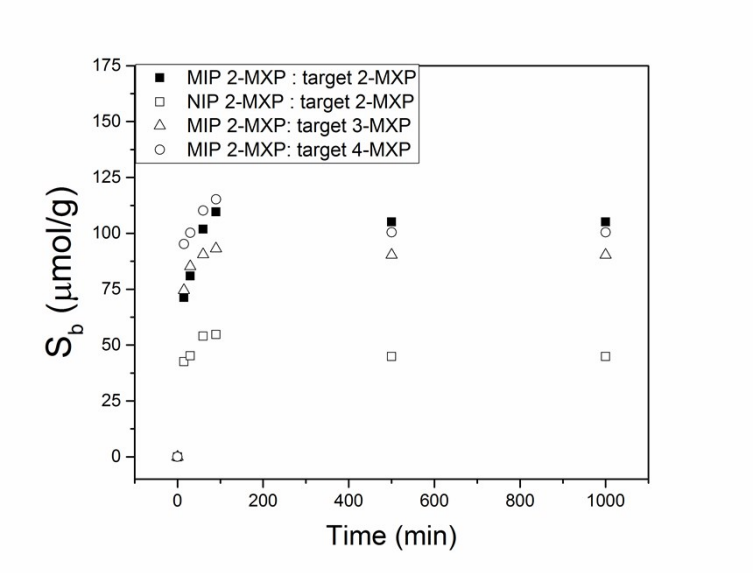


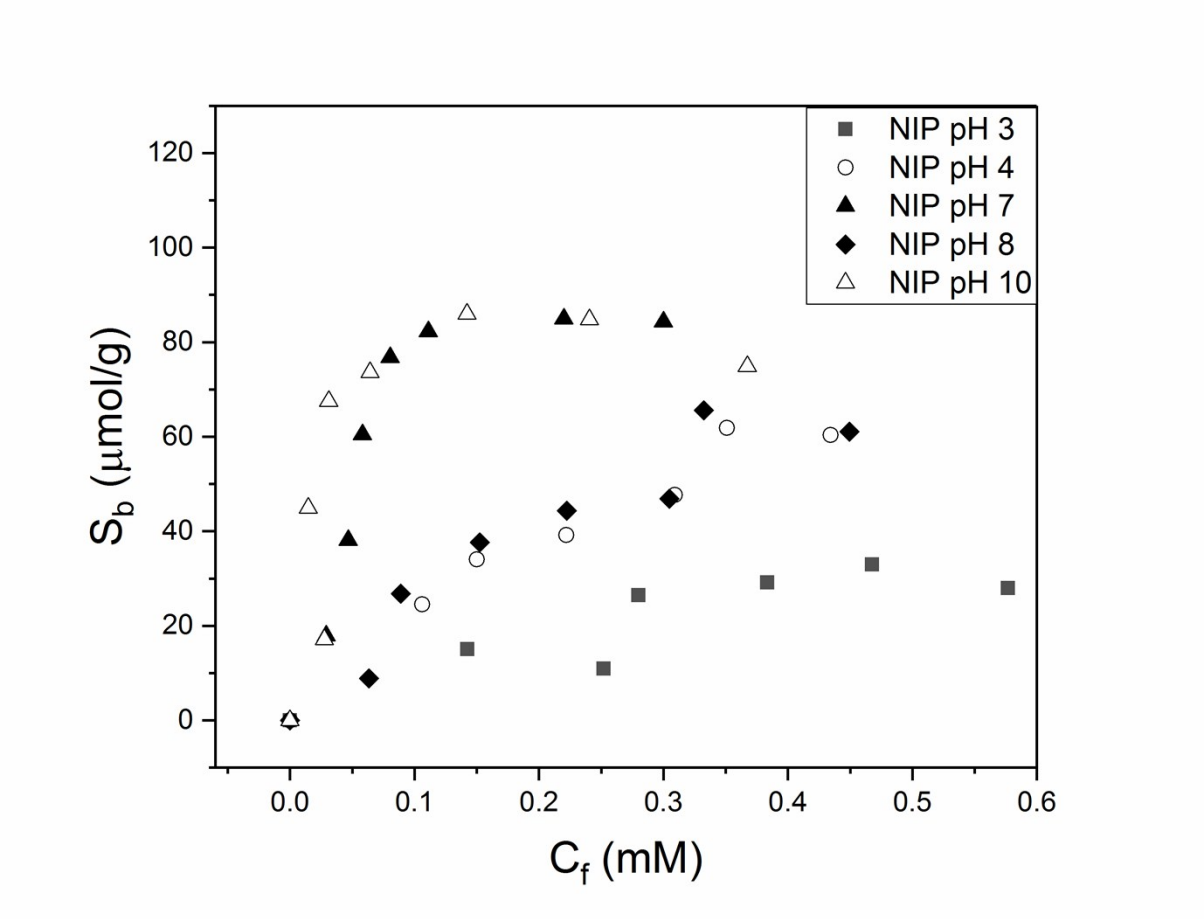
Figure S-3. Representative chromatogram (time given in minutes on x-axis) of a solution containing 2-MXP; 3-MXP and 4-MXP obtained using an ACE 5 C18-AR (150 mm × 4.6 mm i.d., particle size: 5 µm) column. See experimental section for instrumental parameters.

Supporting Information 4, Time dependent optical batch rebinding experiment.



S-4. A time dependent optical batch rebinding experiment was conducted, for which the concentration of 2-MXP was fixed at 0.3 mM (PBS, pH = 7). Increases in binding were observed until 180 min, after which saturation effects are observed. We determined that the highest specificity, defined as the total binding over the non-specific binding to the NIP, was achieved after 90 min.

Supporting Information 5, Binding isotherms of NIP at different pH values



S-5: Binding isotherms of NIPs upon exposure to aqueous 2-MXP solutions at pH 3 (solid squares), pH 4 (open circles), pH 7 (solid triangles), pH 8 (open triangles) and pH 10 (solid diamonds).

Supporting Information 6, Binding isotherms of NIP at different pH values

S-6: Binding isotherms of NIPs upon exposure to aqueous 2-MXP solutions at pH 3 (solid squares), pH 4 (open circles), pH 7 (solid triangles), pH 8 (open triangles) and pH 10 (solid diamonds).

Supporting Information 7, Tables with fit data for MIP and NIPs exposed to 2-MXP solutions at various pH values (Table 1) and MIPs exposed to different molecules similar in structure to MXP (Table 2).

Table 1. Allometric fit values for MIP and NIP powders exposed to 2-MXP solutions with various pH values.

	MIP		NIP	
	a	b	a	b
pH 3	72	0.69	40	0.58
pH 4	180	0.83	98	0.59
pH 8	175	0.85	100	0.50
pH 10	150	0.71	95	0.70

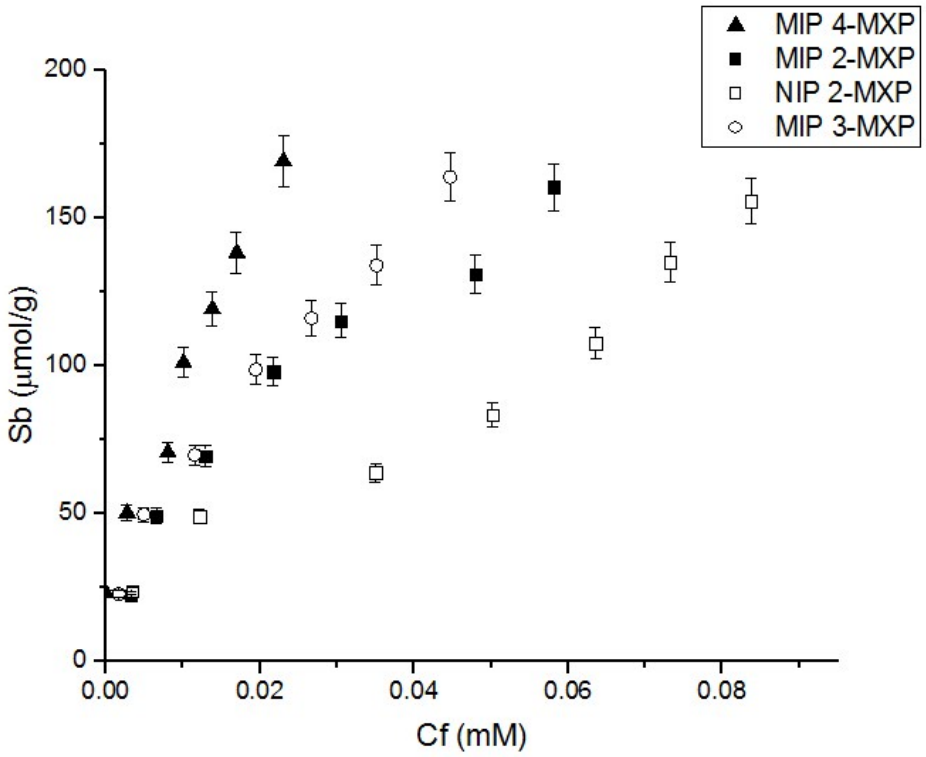
Note: at pH = 7, saturation of the binding sites is not achieved and therefore, a linear fit was applied for which the intercept was set to 0. For 2-MXP, the slope was equal to 2800 ± 300, 3100 ± 250 for 3-MXP and 6880 ± 520 for 4-MXP. This shows there is no significant difference between 2 and 3-MXP, while 4-MXP exhibits higher binding. A possible explanation for this could be that the OMe group is not hindered in the para position, which gives it more freedom to interact with the monomers.

Table 2. Linear fit values for MIP powders exposed to aqueous solutions containing various molecules that are similar in structure or functionality to MXP

	Slope (μmol/g*mM)
MDMA	134
Ketamine	156
Dopamine	180
Diphenidine	287
Caffeine	50

Note: Because most of the binding is considered non-specific, a linear fit works better (R^2>0.92) compared to allometric fits (R^2 ~0.8). These results show that the slope for MXP is at least 10x higher compared to diphenidine, which is very similar in structure to MXP.

Supporting Information 8, Binding isotherms of NIP at different pH values



S-8: Binding isotherms of MIP designed for 2-MXP upon exposure to the three regioisomers in aqueous solutions (solid triangles for 4-MXP, solid squares for 2-MXP and open circles for 3-MXP). The open squares represent the binding of 2-MXP to a reference NIP.