

Supplementary Materials

Flow-through Macroporous Polymer Monoliths Containing Artificial Catalytic Centers Mimicking Chymotrypsin Active Site

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Table S1. Compositions of polymerization mixtures tested for the one-step synthesis of macroporous polymer monolith containing catalytic centers mimicking chymotrypsin active site. Conditions: monomers/porogens = 25/75 (% v/v), AIBN concentration was 1% from mass of monomers; polymerization time –8 h; temperature –70 °C.

Sample	Content of CoCl ₂ , mol%	Composition of monomers, mol%					Porogens, vol%	Characteristics
		HEMA	MAA	MA-His	EDMA	PEGDA		
1	10	10	10	-	70	-	1,4-butanediol/ 1-decanol/ 1-propanol/ toluene = 59/7/8/26	Delamination
2	10	10	10	10	-	70	1,4-butanediol/ 1-decanol/ isopropanol/ isoctane = 21/48/3/28	Soft polymer
3	10	10	10	10	-	70	1,4-butanediol/ 1-decanol/ isopropanol/ methanol/ H ₂ O = 26/52/8/7/7	Soft polymer
4	10	10	10	10	56	14	1,4-butanediol/ 1-decanol/ methanol/H ₂ O = 24/36/29/11	Compressed under flow rate
5	10	10	10	-	70	-	1,4-butanediol/ 1-decanol/ isopropanol/ methanol/ H ₂ O = 10/56/20/10/4	Delamination
6	10	10	10	-	70	-	1,4-butanediol/ 1-decanol/ methanol/PEG- 200/cyclohexano l/H ₂ O = 19/13/3/32/7/19	Delamination
7	10	10	10	-	70	-	1,4-butanediol/ methanol/H ₂ O = 35/43/22	Permeability = (3.6±0.3) × 10 ⁻¹⁴ , porosity = 92%; average pore size = 1090±85 nm

Table S2. Compositions of polymerization mixtures tested for the synthesis of macroporous monolithic framework. Conditions: monomers/porogens = 20/80 (% v/v), AIBN concentration was 1% from mass of monomers; polymerization time –5 h; temperature –70 °C.

Sample	Monomers, mol%			Porogens, vol%		Characteristics	
	EDMA	DEGDMA	PEGDA	1-Dodecanol	Toluene	Average pore size, nm	Porosity, %
1	80	20	-	80	20	1150 ± 60	83 ± 3
2	-	-	100	70	30	830 ± 90	91 ± 10
3	100	-	-	90	10	2230 ± 100	35 ± 12
4	100	-	-	70	30	1580 ± 100	82 ± 5

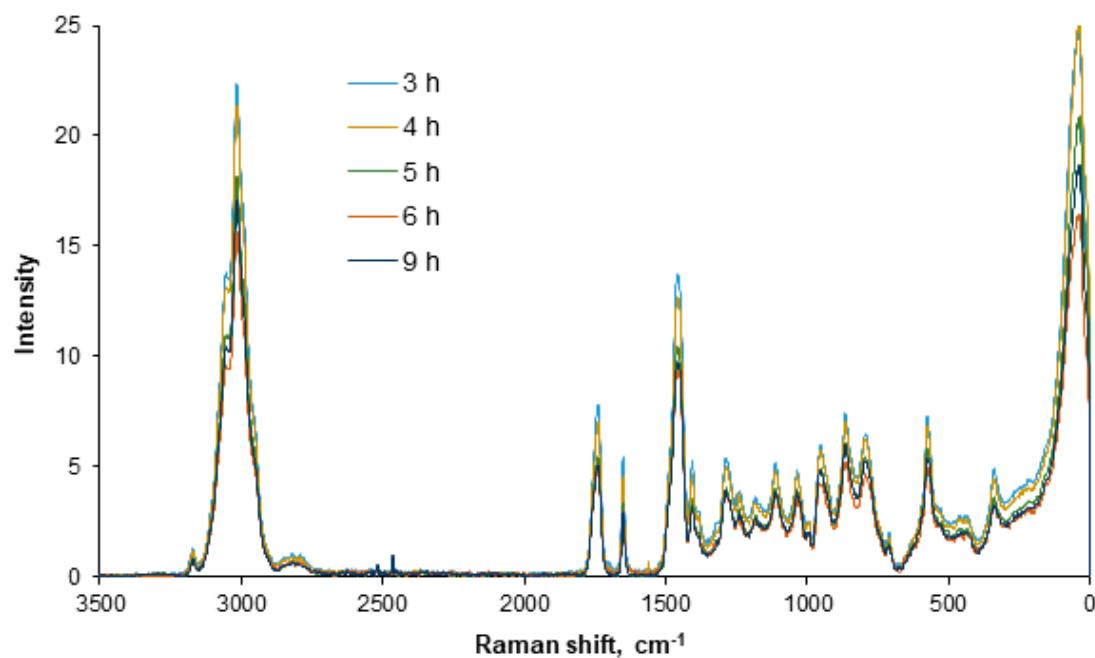


Figure S1. Raman spectra of macroporous polyEDMA synthesized during different polymerization time.

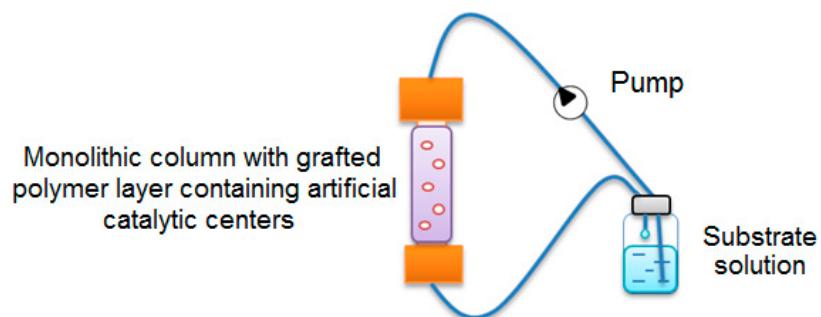


Figure S2. Scheme of catalysis performance in the recirculation mode.

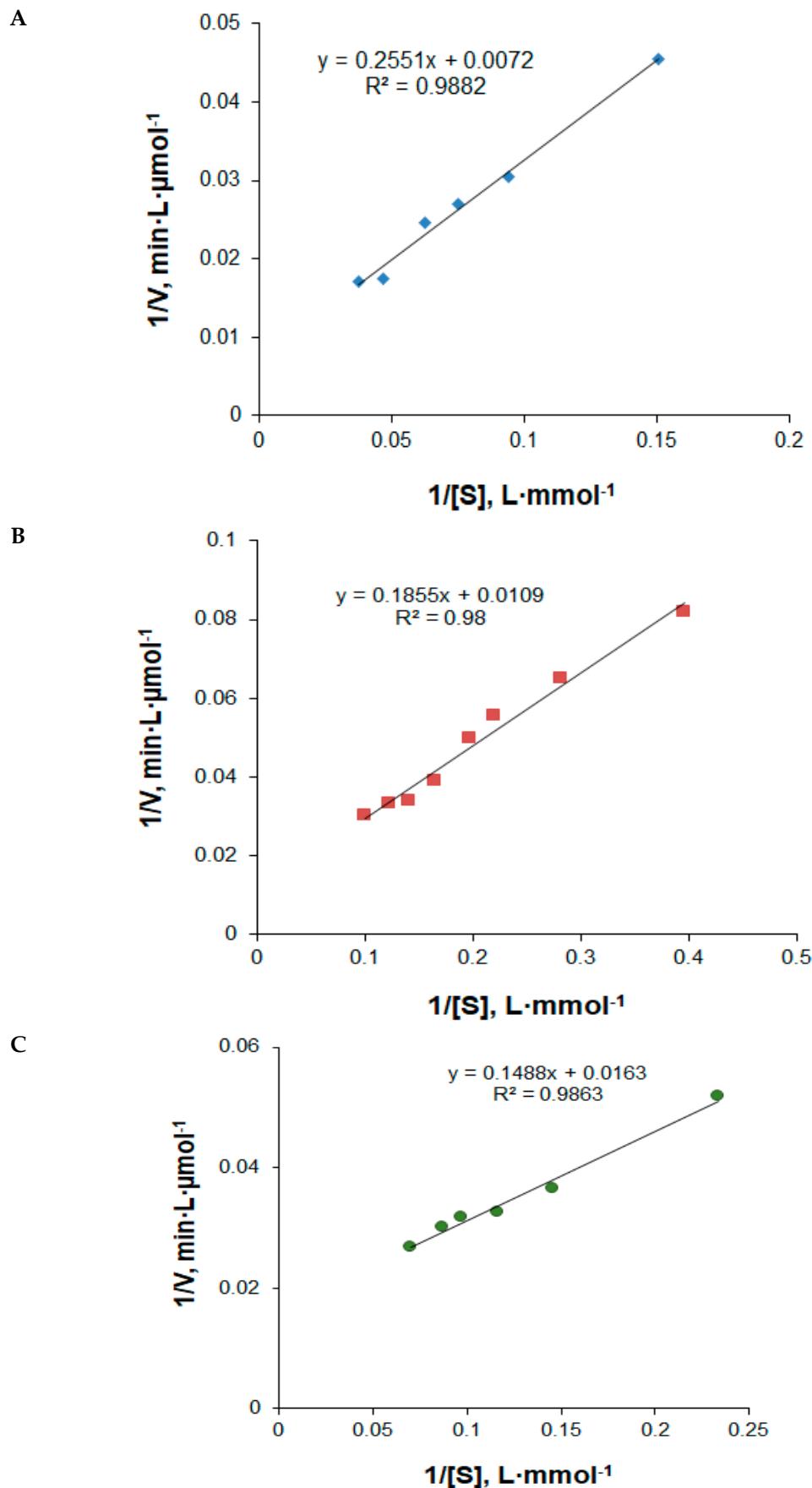


Figure S3. Lineweaver-Burk plots for hydrolysis of Z-Tyr-OPNP by macroporous non-imprinted mimic (NIC) (A) and immobilized enzyme (IME) (B) monoliths, and hydrolysis of Fmoc-Ala-OPNP by macroporous imprinted mimic (MIC) monolith (C).

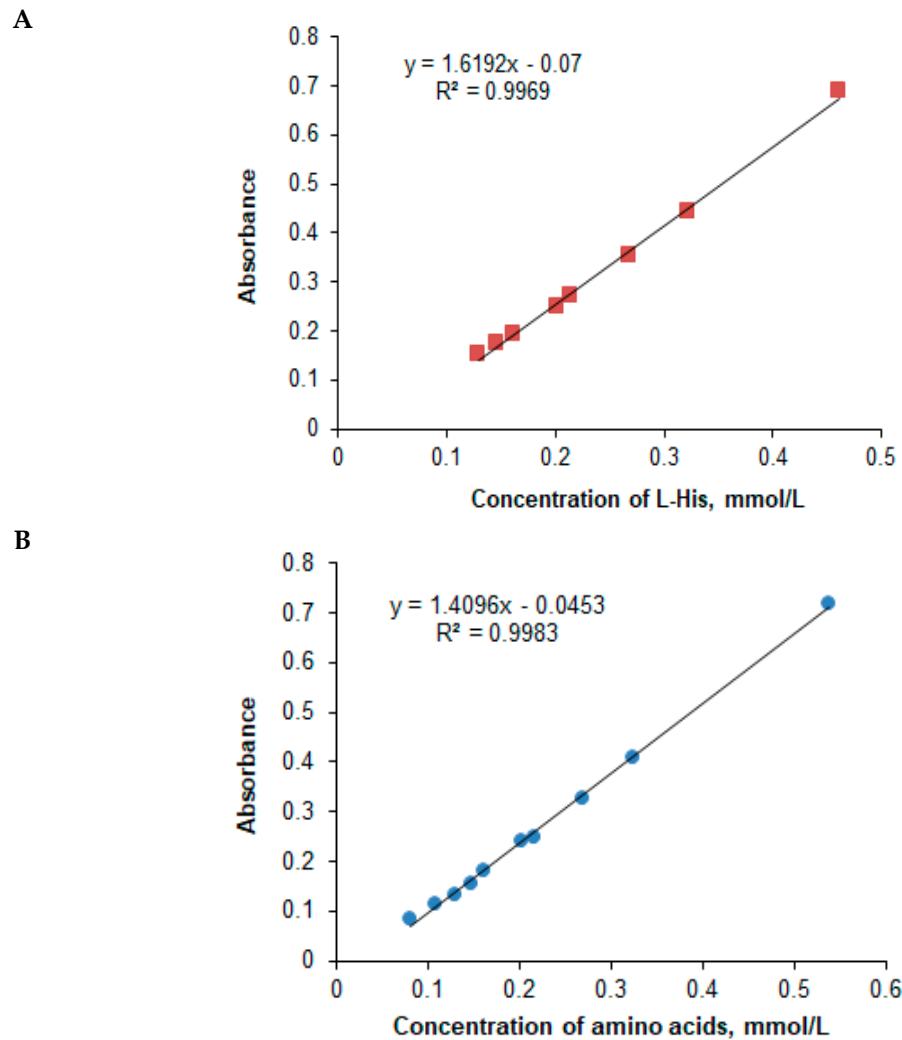


Figure S4. Calibration plot for L-His (A) and mixture of amino acids (L-Ala, L-His and L-Ser) (B) determination with the use of TNBS solution. Absorbance measurement was done at $\lambda = 425$ nm.

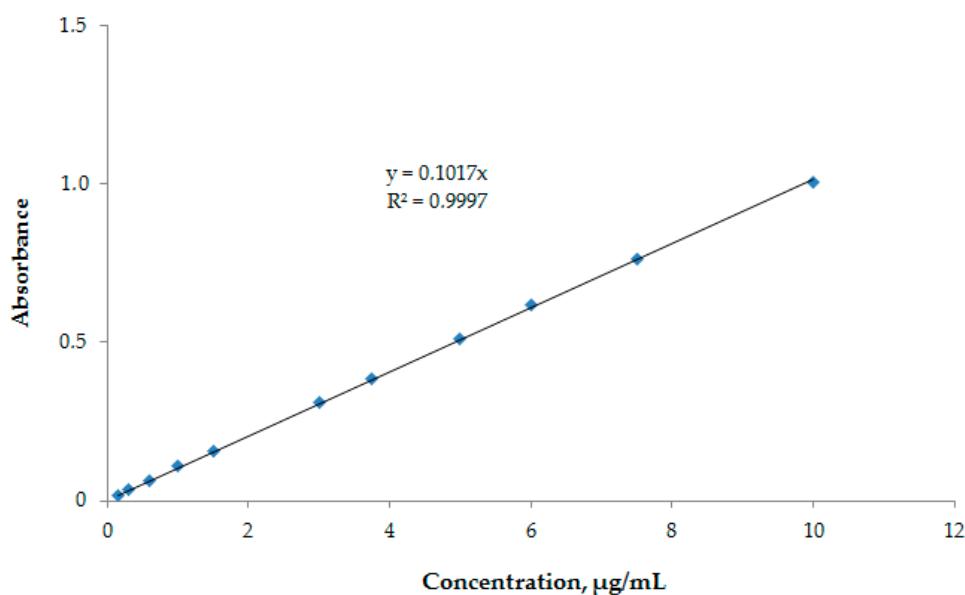


Figure S5. Calibration plot for p-nitrophenol (PNP). Absorbance of PNP measured in the mixture of acetonitrile/0.005M sodium phosphate buffer ($\text{pH} = 7.8$) = 60/40 (% v/v) was measured at 405 nm.