

SUPPLEMENTARY INFORMATION

Understanding Microplastic Retention Efficiency and Sorption Dynamics in Porous Media

Hande Okutan^{1,2,3}, Çağdaş Sağır⁴, Bedri Kurtuluş¹, Hasan Burak Özmen³, Emrah Pekkan³, Moumtaz Razack⁵, Philippe Le Coustumer^{2,6,*}

¹ Department of Geological Engineering, University of Muğla Sıtkı Koçman, 48000, Muğla, Türkiye

² Sciences et Technologies, Ecole Doctorale, Université Bordeaux Montaigne, 33607, Pessac, France

³ Institute of Earth and Space Sciences, Eskişehir Technical University, 26555, Eskişehir, Türkiye

⁴ Geological Engineering Department, Middle East Technical University, 06800, Ankara Türkiye

⁵ IC2MP UMRCNRS 7285, Université de Poitiers, 86073, Poitiers, France

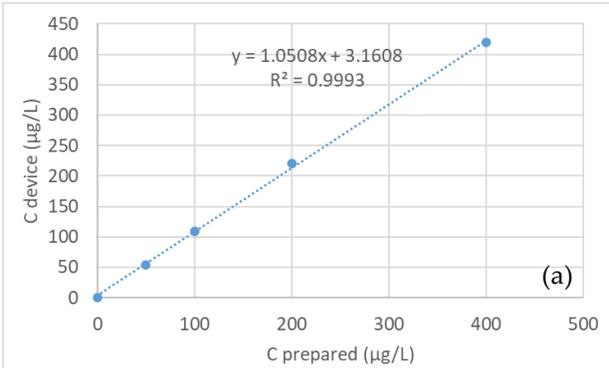
⁶ Bordeaux Imaging Center, CNRS UAR3420-INSERM US4, Université de Bordeaux, 33076, Bordeaux, France

* Correspondence: Philippe.le-coustumer@u-bordeaux.fr

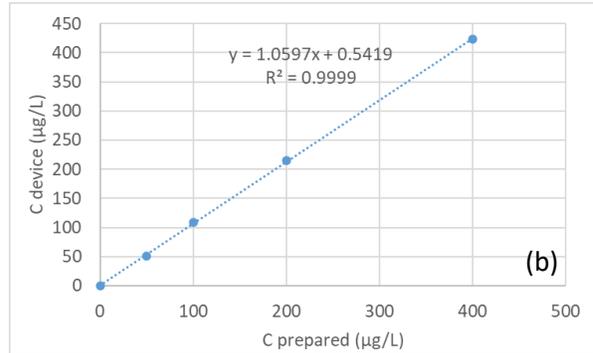
Table S1 Particle size classification of MPLs (adapted from [1])

Classification	Microplastics						Large Microplastics
	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	
Particle size (µm)	1 to < 5	5 to < 10	10 to < 50	50 to < 100	100 to < 500	500 to < 1000	1000 to < 5000

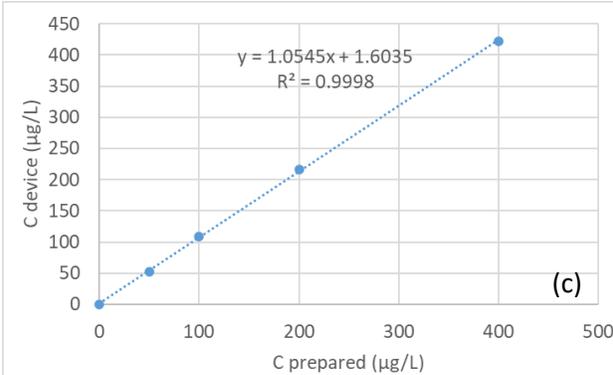
DYE A



DYE A.1



DYE B



DYE B.1

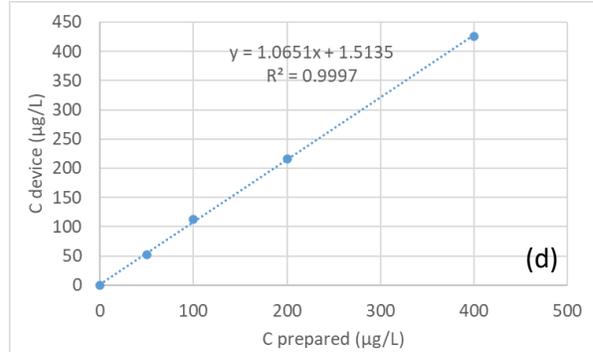
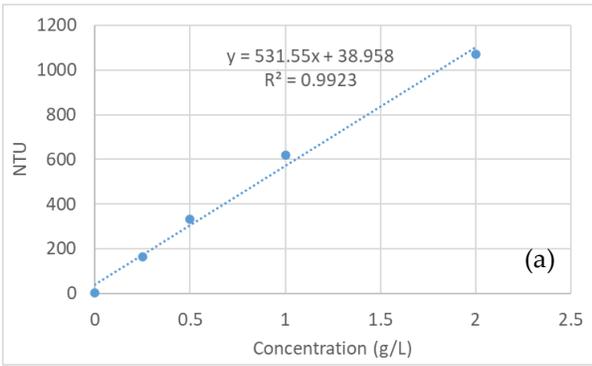
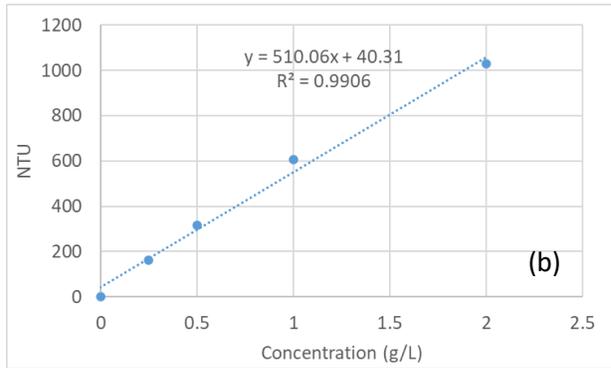


Figure S1 The calibration curves for dye experiments which were used for plotting BTCs. (a) is for DYE A, (b) is for DYE A.1, (c) is for DYE B and (d) is for DYE B.1 experiments

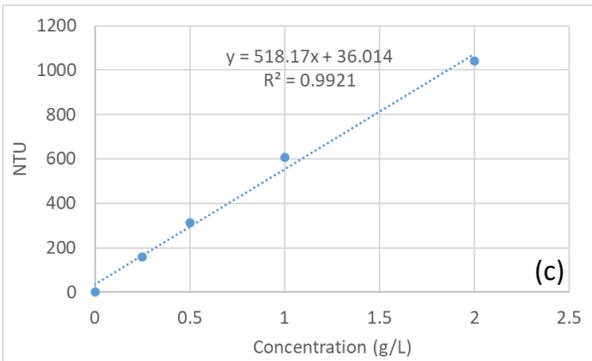
MPI A



MPI A.1



MPI B



MPI B.1

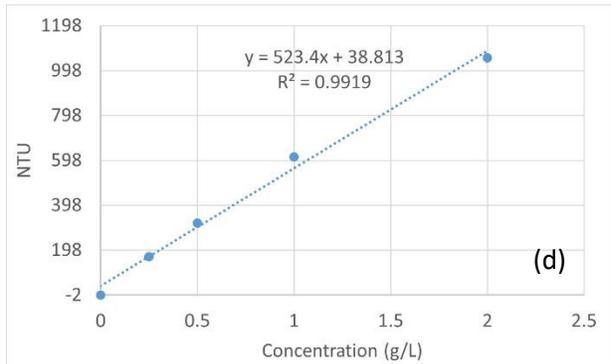


Figure S2 The calibration curves for MPI experiments which were used plotting curves. NTU is the unit of turbidity. (a) is for MPI A, (b) is for MPI A.1, (c) is for MPI B and (d) is for MPI B.1 experiments

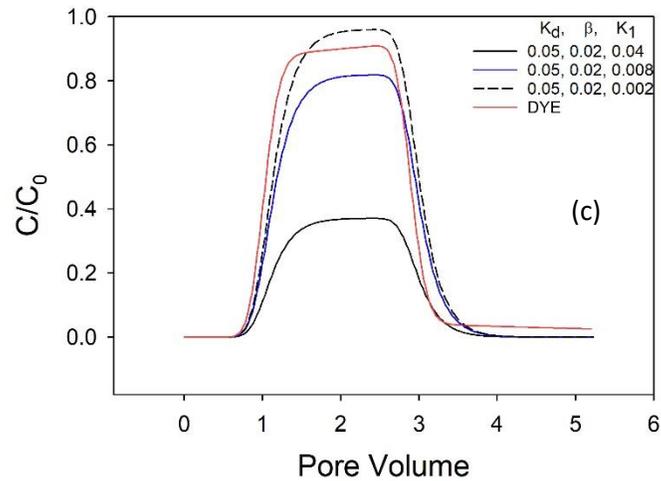
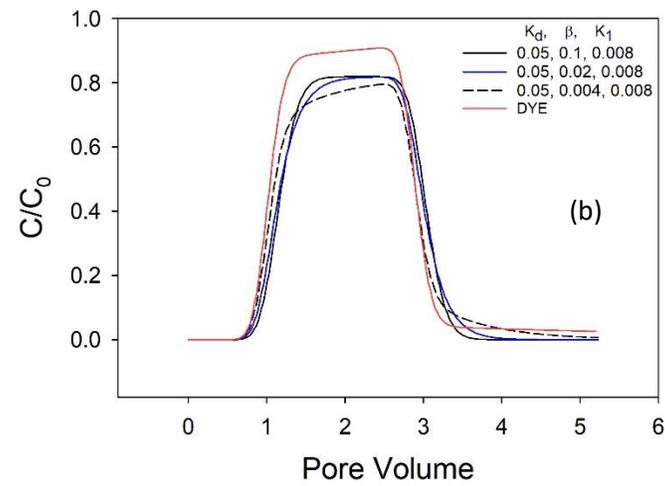
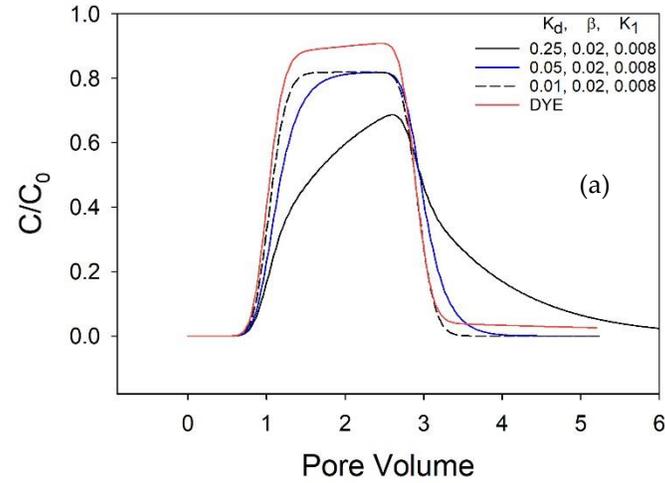


Figure S3 The BTCs of the sensitivity simulations for the distribution coefficient, K_d (a), mass transfer rate, β (b), and kinetic sorption rate, K_1 (c), were analyzed. The computed BTCs of the MPI B and DYE B experiments are represented by a blue line and a red line, respectively. In the legend, the parameters are listed in the order of K_d , β , and K_1 . (This sensitivity analyses corresponds to MPI B experiments where 1 pore volume is equal to 1678 ml)

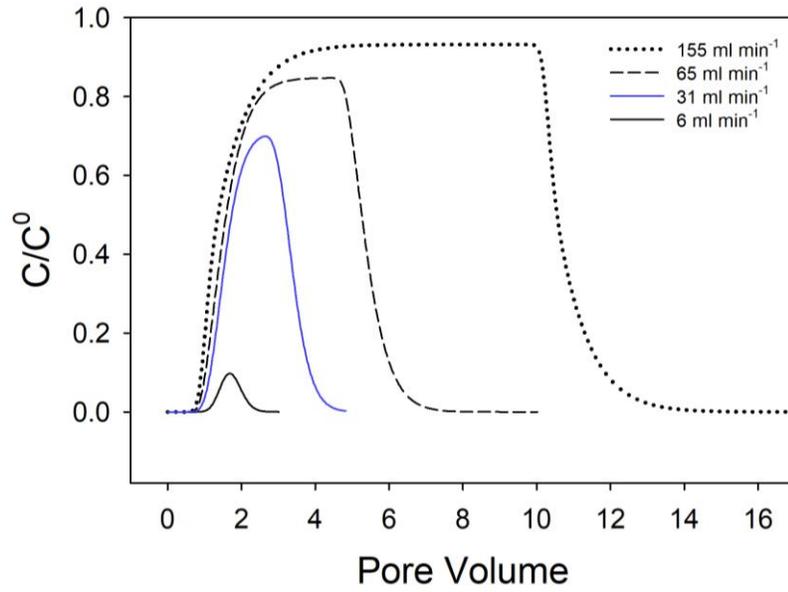


Figure S4 The BTCs of the sensitivity simulations for the flow rates were analyzed. The computed BTCs of the MPI B experiment are represented by a blue line. In the legend, the parameters are listed in the order of K_d , β , and K_1 . (This sensitivity analyses corresponds to MPI A experiments where 1 pore volume is equal to 1688 ml)