Table S1

Kinetics parameters for the adsorption of Fe(III) ions onto MPs in freshwater environments.

MPs	Aquatic environment	Pseudo-First-Order		Pseudo-Second-Order	
		k_1 (h^{-1})	R^2	k_2 (h^{-1})	R^2
			0.966		0.948
PSS_0-f		0.340	0.980	0.004	0.968
PSM_0-f		0.279	0.972	0.003	0.962
PSL_0-f		0.163	0.992	0.002	0.989
PSS_{10}-f		0.363	0.959	0.004	0.934
PSM_{10}-f		0.353	0.980	0.004	0.957
PSL_{10}-f		0.329	0.976	0.004	0.951
PSS_{30}-f		0.353	0.976	0.004	0.949
PSM_{30}-f		0.350	0.975	0.004	0.947
PSL_{30}-f		0.401	0.954	0.006	0.933
PPS_0-f		0.247	0.991	0.003	0.980
PPM_0-f		0.192	0.992	0.002	0.986
PPL_0-f		0.245	0.991	0.004	0.979
PPS_{10}-f		0.362	0.976	0.004	0.951
PPM_{10}-f	freshwater	0.360	0.963	0.005	0.936
PPL_{10}-f		0.338	0.971	0.005	0.943
PPS_{30}-f		0.249	0.962	6.61443E-4	0.971
PPM_{30}-f		0.225	0.981	0.003	0.985
PPL_{30}-f		0.090	0.972	0.003	0.976
$PETS_0$-f		0.148	0.991	6.75757E-4	0.988
$PETM_0$-f		0.078	0.991	0.002	0.989
$PETL_0$-f		0.067	0.989	6.61248E-4	0.986
$PETS_{10}$-f		0.455	0.979	0.007	0.955
$PETM_{10}$-f		0.330	0.969	0.005	0.941
$PETL_{10}$-f		0.281	0.951	0.004	0.924
$PETS_{30}$-f		1.599	0.638	0.029	0.664
$PETM_{30}$-f		1.271	0.913	0.021	0.867
$PETL_{30}$-f		0.419	0.984	0.007	0.957

Table S2

Kinetics parameters for the adsorption of Fe(III) ions onto MPs in saltwater environments.

MPs	Aquatic environment	Pseudo-First-Order		Pseudo-second-Order	
		k_1 (h^{-1})	R^2	k_2 (h^{-1})	R^2
			0.966		0.948
PSS_0-s		0.286	0.972	0.003	0.958
PSM_0-s		0.255	0.972	0.003	0.960
PSL_0-s		0.136	0.994	0.001	0.990
PSS_{10}-s		0.340	0.956	0.004	0.944
PSM_{10}-s		0.331	0.965	0.004	0.937
PSL_{10}-s		0.350	0.973	0.005	0.927
PSS_{30}-s		0.378	0.968	0.004	0.947
PSM_{30}-s		0.338	0.971	0.004	0.944
PSL_{30}-s		0.323	0.975	0.004	0.940
PPS_0-s		0.213	0.985	0.005	0.951
PPM_0-s		0.166	0.996	0.003	0.984
PPL_0-s		0.184	0.987	0.002	0.979
PPS_{10}-s		0.324	0.962	0.004	0.934
PPM_{10}-s	saltwater	0.316	0.960	0.004	0.931
PPL_{10}-s		0.287	0.948	0.004	0.919
PPS_{30}-s		0.398	0.985	0.005	0.959
PPM_{30}-s		0.350	0.974	0.004	0.947
PPL_{30}-s		0.325	0.966	0.004	0.937
$PETS_0$-s		0.143	0.961	0.002	0.960
$PETM_0$-s		0.141	0.978	0.002	0.976
$PETL_0$-s		0.171	0.977	0.005	0.973
$PETS_{10}$-s		0.372	0.974	0.006	0.946
$PETM_{10}$-s		0.306	0.959	0.005	0.930
$PETL_{10}$-s		0.274	0.940	0.005	0.912
$PETS_{30}$-s		0.363	0.975	0.006	0.947
$PETM_{30}$-s		0.354	0.972	0.006	0.943
$PETL_{30}$-s		0.359	0.974	0.007	0.945

Table S3

Isotherm parameters for the adsorption of Fe(III) ions onto MPs in freshwater environments.

MPs	Aquatic environment	Langmuir			Freundlich		
		k_L (L mg^{-1})	Q_m (mg g^{-1})	R^2 0.974	K_f (mg g^{-1})/(mg L^{-1})^n	n	R^2 0.954
PSS_0-f	freshwater	0.070	3.226	0.973	0.332	1.736	0.932
PSM_0-f		0.063	3.140	0.971	0.291	1.673	0.932
PSL_0-f		0.063	2.860	0.961	0.261	1.663	0.917
PSS_{10}-f		0.050	4.580	0.968	0.328	1.566	0.936
PSM_{10}-f		0.048	4.221	0.982	0.286	1.525	0.955
PSL_{10}-f		0.035	4.473	0.990	0.216	1.404	0.973
PSS_{30}-f		0.010	17.844	0.986	0.204	0.894	0.982
PSM_{30}-f		0.010	17.238	0.995	0.187	0.895	0.993
PSL_{30}-f		0.017	10.118	0.983	0.205	0.840	0.973
PPS_0-f		0.070	2.971	0.955	0.309	1.742	0.903
PPM_0-f		0.070	2.730	0.952	0.281	1.734	0.896
PPL_0-f		0.048	2.988	0.984	0.202	1.523	0.955
PPS_{10}-f		0.044	4.745	0.973	0.293	1.485	0.947
PPM_{10}-f		0.045	4.202	0.979	0.266	1.495	0.952
PPL_{10}-f		0.047	3.449	0.991	0.229	1.518	0.969
PPS_{30}-f		0.005	32.982	0.997	0.180	0.901	0.993
PPM_{30}-f		0.008	21.523	0.996	0.185	0.910	0.996
PPL_{30}-f		0.009	17.832	0.995	0.192	0.939	0.995
$PETS_0$-f		0.064	2.927	0.956	0.274	1.678	0.905
$PETM_0$-f		0.064	2.635	0.948	0.243	1.666	0.893
$PETL_0$-f		0.050	2.447	0.964	0.173	1.536	0.923
$PETS_{10}$-f		0.040	4.460	0.983	0.254	1.466	0.975
$PETM_{10}$-f		0.038	4.232	0.988	0.225	1.435	0.975
$PETL_{10}$-f		0.030	4.202	0.986	0.170	1.354	0.976
$PETS_{30}$-f		0.020	8.713	0.981	0.220	0.809	0.971
$PETM_{30}$-f		0.018	8.626	0.978	0.192	0.829	0.966
$PETL_{30}$-f		0.006	21.360	0.933	0.123	0.809	0.931

Table S4

Isotherm parameters for the adsorption of Fe(III) ions onto MPs in saltwater environments.

MPs	Aquatic environment	Langmuir			Freundlich		
		k_L (L mg^{-1})	Q_m (mg g^{-1})	R^2 0.974	K_f (mg g^{-1})/(mg L^{-1})^n	n	R^2 0.954
PSS_0-s	saltwater	0.074	2.921	0.973	0.328	1.804	0.951
PSM_0-s		0.066	2.813	0.951	0.281	1.728	0.930
PSL_0-s		0.067	2.676	0.964	0.270	1.734	0.936
PSS_{10}-s		0.039	4.972	0.961	0.262	0.704	0.932
PSM_{10}-s		0.037	4.477	0.974	0.224	0.712	0.950
PSL_{10}-s		0.025	5.204	0.988	0.163	0.782	0.974
PSS_{30}-s		0.007	22.851	0.979	0.176	0.932	0.976
PSM_{30}-s		0.007	22.884	0.990	0.159	0.939	0.987
PSL_{30}-s		0.013	11.921	0.974	0.171	0.884	0.966
PPS_0-s		0.075	2.631	0.971	0.301	1.814	0.942
PPM_0-s		0.085	2.272	0.972	0.296	1.909	0.935
PPL_0-s		0.070	2.169	0.965	0.230	1.767	0.957
PPS_{10}-s		0.034	5.134	0.978	0.236	0.722	0.961
PPM_{10}-s		0.039	4.252	0.973	0.226	0.702	0.945
PPL_{10}-s		0.036	3.706	0.985	0.178	0.717	0.964
PPS_{30}-s		0.003	61.095	0.996	0.166	0.978	0.989
PPM_{30}-s		0.004	34.577	0.995	0.155	0.956	0.995
PPL_{30}-s		0.005	28.482	0.991	0.145	0.957	0.994
$PETS_0$-s		0.088	2.108	0.963	0.285	1.941	0.922
$PETM_0$-s		0.085	1.919	0.978	0.252	1.918	0.949
$PETL_0$-s		0.087	1.784	0.965	0.238	1.929	0.925
$PETS_{10}$-s		0.025	5.580	0.983	0.184	0.773	0.972
$PETM_{10}$-s		0.024	5.308	0.982	0.158	0.791	0.969
$PETL_{10}$-s		0.016	5.864	0.985	0.114	0.844	0.977
$PETS_{30}$-s		0.017	9.526	0.967	0.189	0.846	0.955
$PETM_{30}$-s		0.015	9.653	0.960	0.160	0.872	0.948
$PETL_{30}$-s		0.004	27.977	0.910	0.103	0.996	0.908