

1 ELECTRONIC SUPPLEMENTARY INFORMATION (ESI)

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**Adsorption of cationic surfactant as a probe of the montmorillonite
4 surface reactivity in the alginate hydrogel composites**

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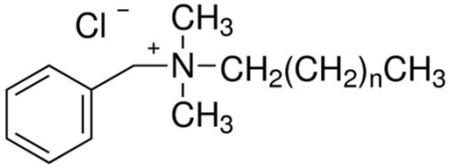
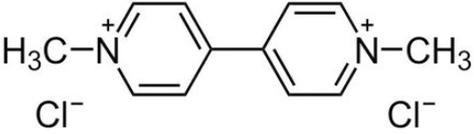
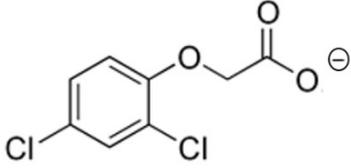
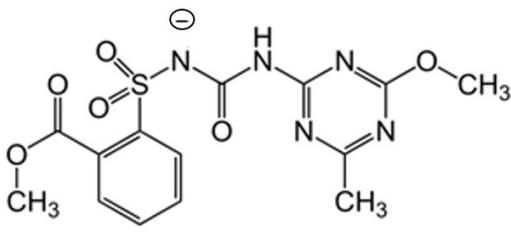
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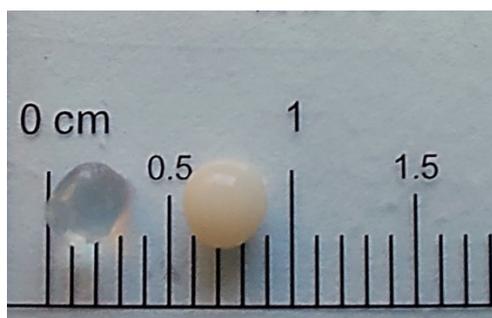
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25 **Table S1.** Molecular structures of the contaminants studied

Molecular Structures	
	<p>BAC (benzalkonium chloride) Cationic surfactant Molecular Weight 283.8-423.7g/mol Carbon atoms in Chain: n = 8-18 BAC-12 (n=12); BAC-14 (n=14)</p>
	<p>PQ (Paraquat) Cationic herbicide Molecular Weight: 257.16 g/mol</p>
 <p>At pH=6</p>	<p>2,4-D (2,4-Dichlorophenoxyacetic acid) Anionic herbicide Molecular weight: 221.04 g/mol pKa: 2.98</p>
 <p>At pH=6</p>	<p>MM (Metsulfuron Methyl) Anionic herbicide Molecular weight: 381.36 g/mol pKa: 3.3</p>

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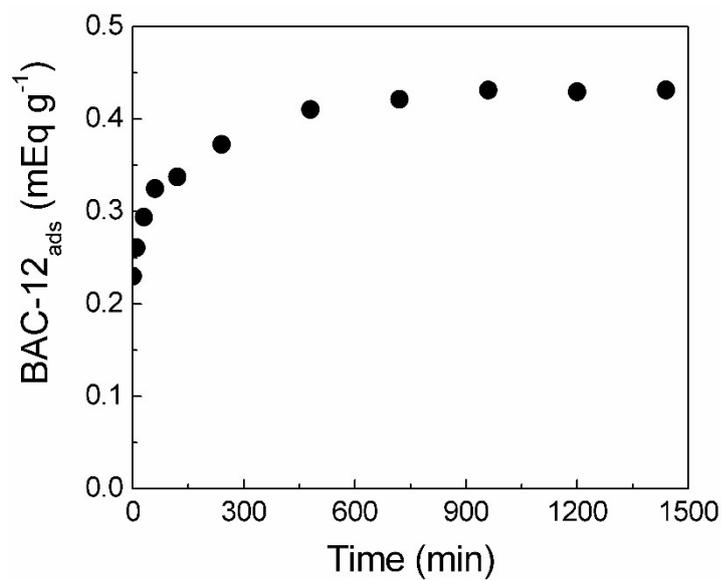
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29 **Figure S1.** Digital image of AA (left) and A-MMT (right) beads.

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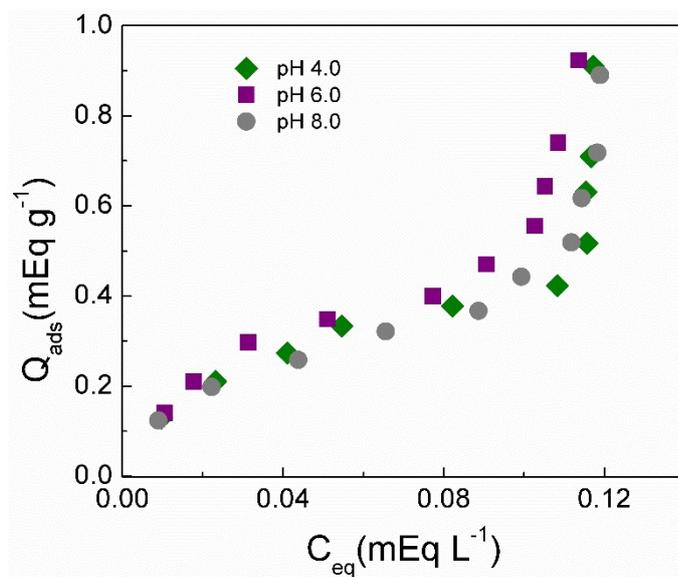


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34 **Figure S2.** BAC-12 adsorbed amount as a function of time ($C_i = 0.225 \text{ mEq L}^{-1}$)

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38 **Figure S3.** BAC-12 adsorption isotherms on A-MMT beads at different pH.

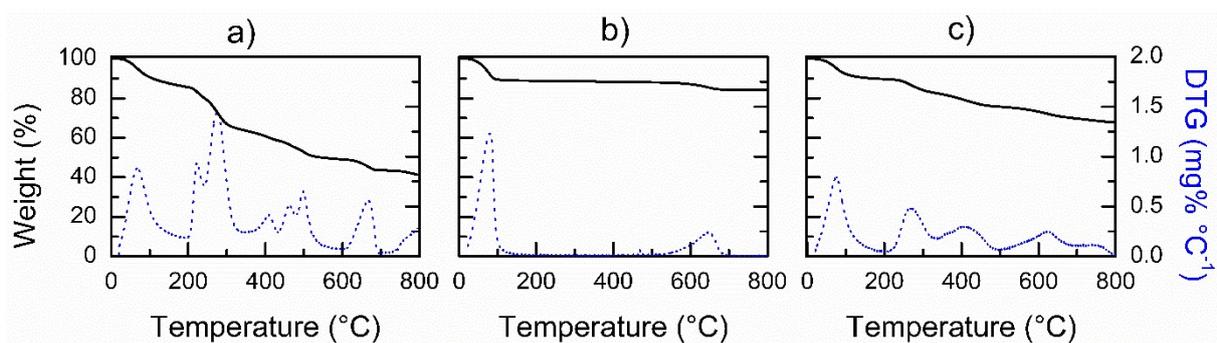
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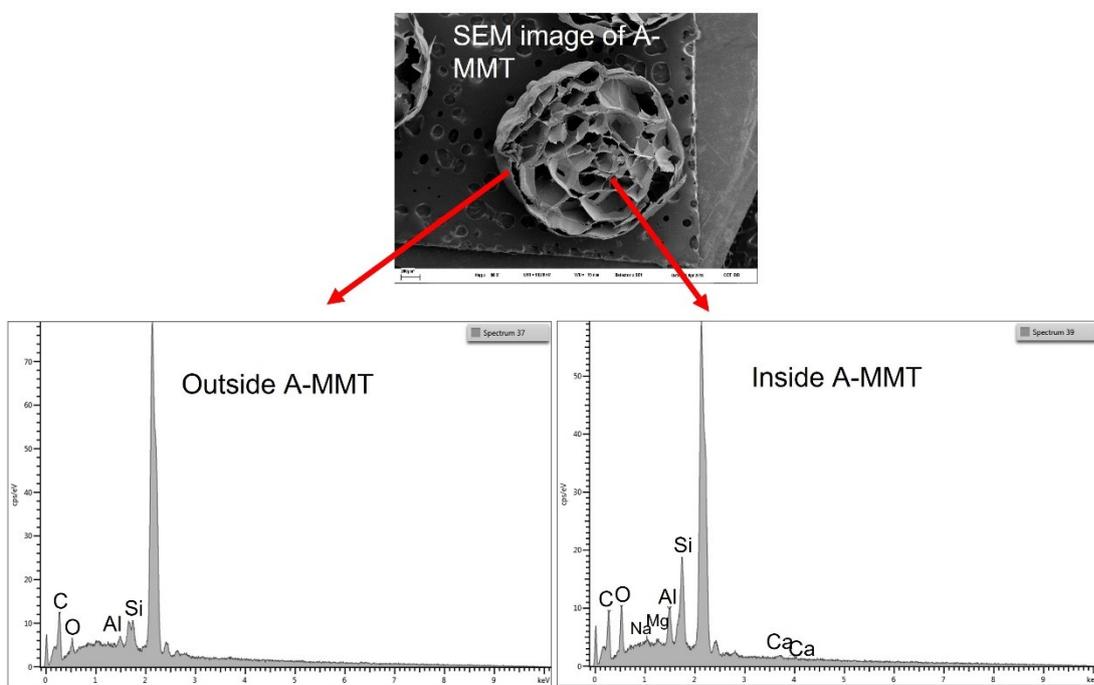


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45 **Figure S4.** Thermal analysis TGA (black lines) and DTG (dotted lines) thermal curves of (a) AA beads;
 46 (b) MMT and (c) A-MMT beads.

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50 **Figure S5.** EDS elemental mapping of A-MMT bead

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56 **TABLE S2:** d- basal spacing (Å) and 2θ angle (°) as a function of adsorbed amount (mEq g⁻¹) of
 57 BAC-12.

Q _{ads} mEq g ⁻¹	2θ (°)	d Å
0.00	7.08	12.48
0.04	7.08	12.48
	6.19	14.27
0.15	7.08	12.50
	6.21	14.22
0.21	7.08	12.48
	6.20	14.27
	5.23	16.90
0.30	7.08	12.51
	6.14	14.38
	5.12	17.24
0.37	7.08	12.48
	6.25	14.14
	5.20	17.46
0.43	7.08	12.52
	5.07	17.38
0.47	7.08	12.48
	5.02	17.51
0.56	7.08	12.49
	4.95	17.65
0.65	7.08	12.50
	4.98	17.55
0.75	7.08	12.56
	4.93	17.88
0.84	4.95	17.75
0.91	4.89	17.91
1.00	4.95	17.69
1.02	4.93	17.93

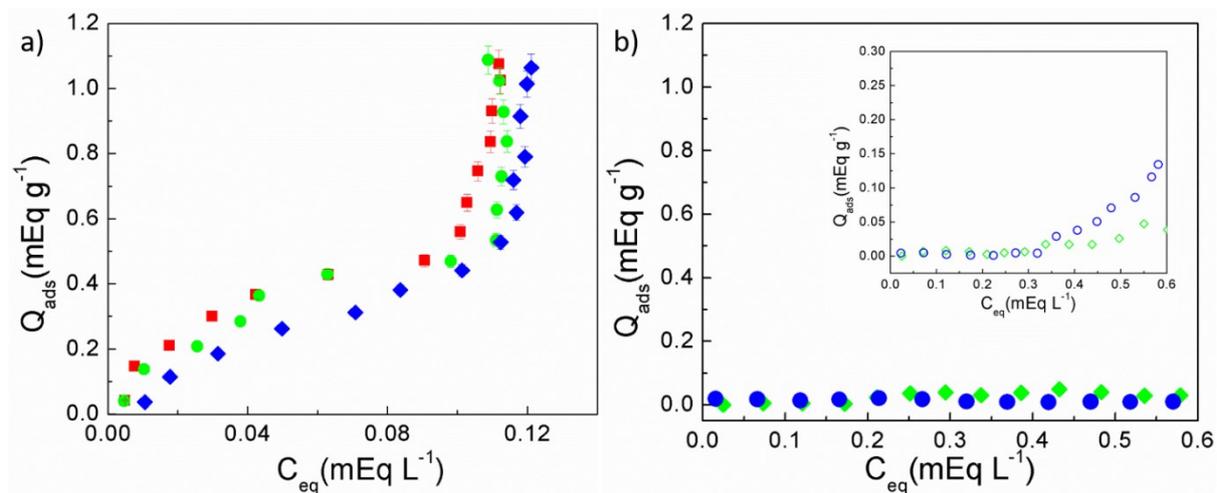
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64 **Figure S6.** Adsorption isotherms on A-MMT composites: (a) BAC-12 (red squares), BAC in presence of
 65 2,4-D (blue diamonds), and BAC in presence of MM (green circles); and (b) 2,4-D (blue circles), MM
 66 (green diamonds). Inset 2,4-D in presence of BAC-12 (empty circles) and MM in presence of BAC-12
 67 (empty diamonds)

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