Synthesis of hybrid core-shell nanoparticles by emulsion (co)polymerization of styrene and $\gamma$-methacryloxy propyl trimethoxy silane

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Supporting informations

Table 6. Extent of hydrolysis at different pH values evaluated using gas chromatography. [MPS]=10wt% relative to styrene.

<table>
<thead>
<tr>
<th>pH value</th>
<th>2</th>
<th>7</th>
<th>8.5</th>
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</thead>
<tbody>
<tr>
<td>Methanol concentration (g/100g emulsion)</td>
<td>The latex immediately turned to a gel</td>
<td>0.08</td>
<td>0.86</td>
</tr>
<tr>
<td>Percentage of hydrolyzed Si-OR groups</td>
<td>7.3%</td>
<td>75.5%</td>
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FIGURES CAPTION

**Figure 10.** Evolution of pH with time during the semi-batch emulsion polymerization of styrene and MPS. [KPS] = 3.3 g.L⁻¹. Starting pH = 7. [MPS] = 10wt% relative to styrene.

**Figure 11.** FTIR spectra of the core-shell latex particles obtained at different MPS concentrations and pH = 7. (a) [MPS] = 10wt% and (b) [MPS] = 20wt% relative to styrene.

**Figure 12.** $^{29}$Si solid-state NMR analysis of the hybrid core/shell latex particles. pH = 8.5 and [MPS] = 20wt% relative to styrene. (a) before cleaning and (b) after cleaning.

**Figure 13.** FTIR spectra of the core-shell latex particles obtained at pH 8.5 with 10wt% MPS and different addition modes. MPS introduced as a shot (a) or semi-continuously (b).

**Figure 14.** Differential Scanning Calorimetry (DSC) thermograms of the hybrid core-shell latex particles obtained at different MPS concentrations and pH = 7. (a) [MPS] = 5wt%, (b) [MPS] = 10wt% and (c) [MPS] = 20wt% relative to styrene.
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