

## Supplementary Materials

# Fluorinated Poly(ionic liquid)s Coated Superhydrophobic Functional Materials with Efficient Oil/Water Separation Performance

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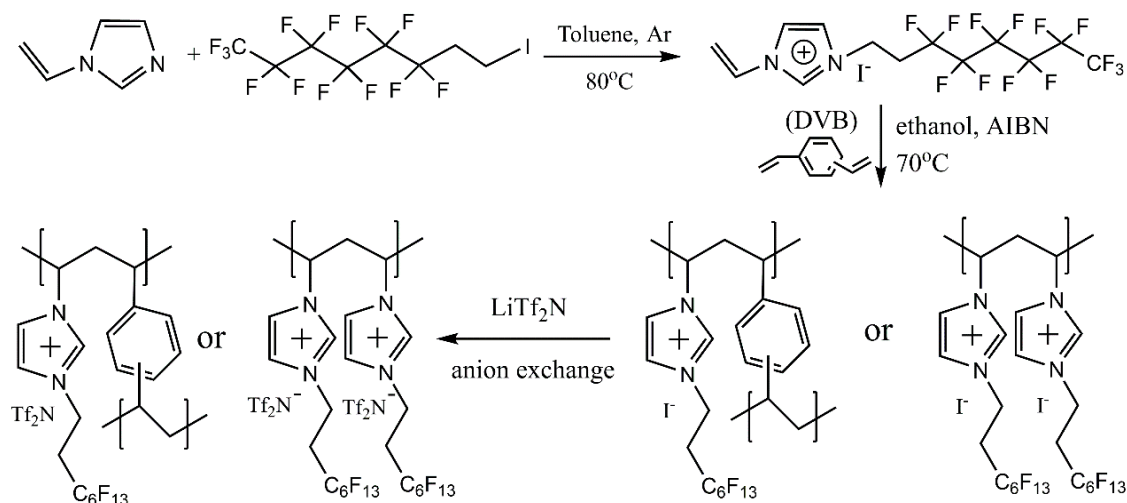
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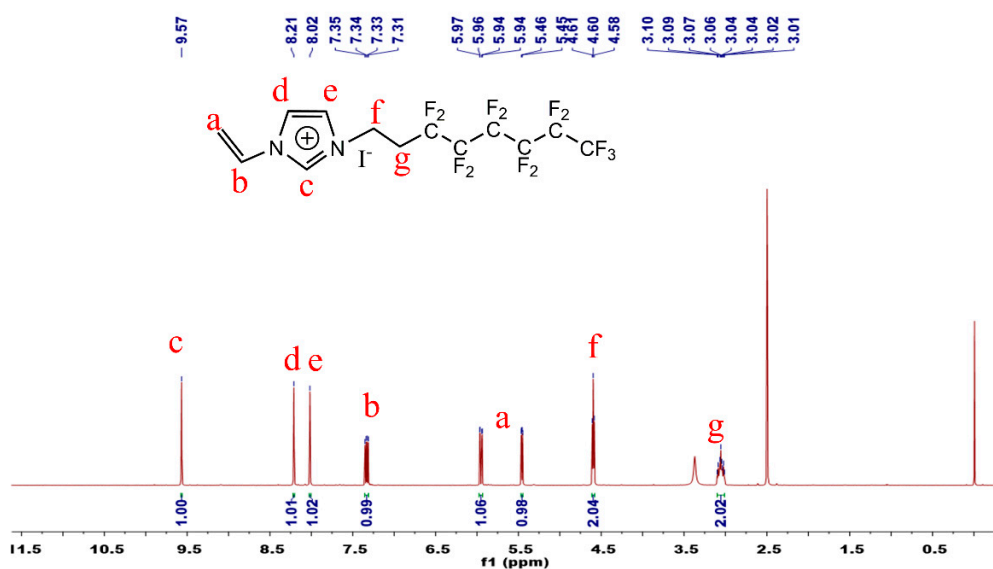
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Scheme S1. The schematic of the reaction of PIL-1 with and without DVB.





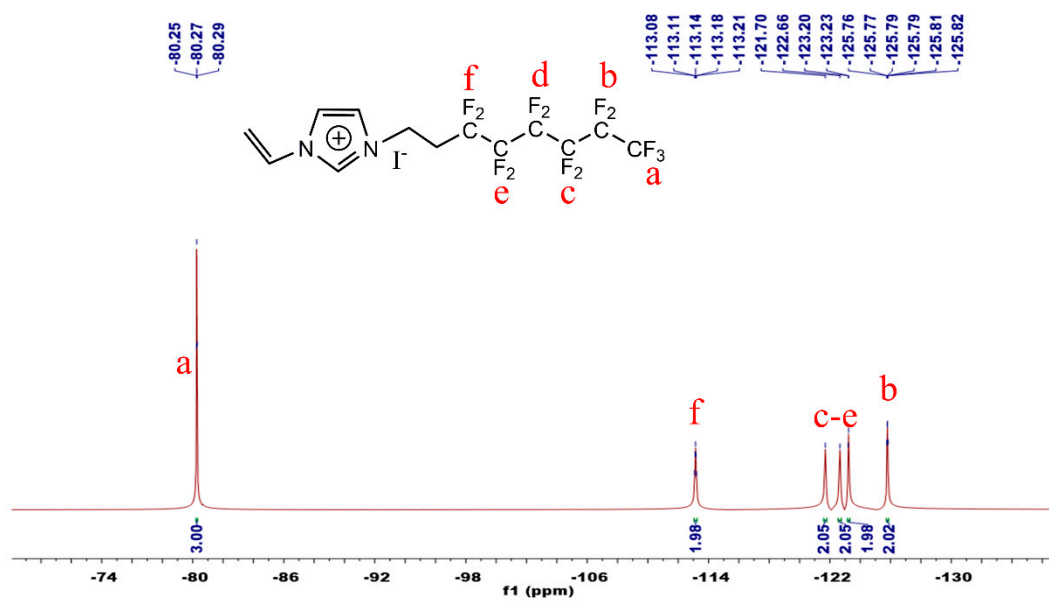
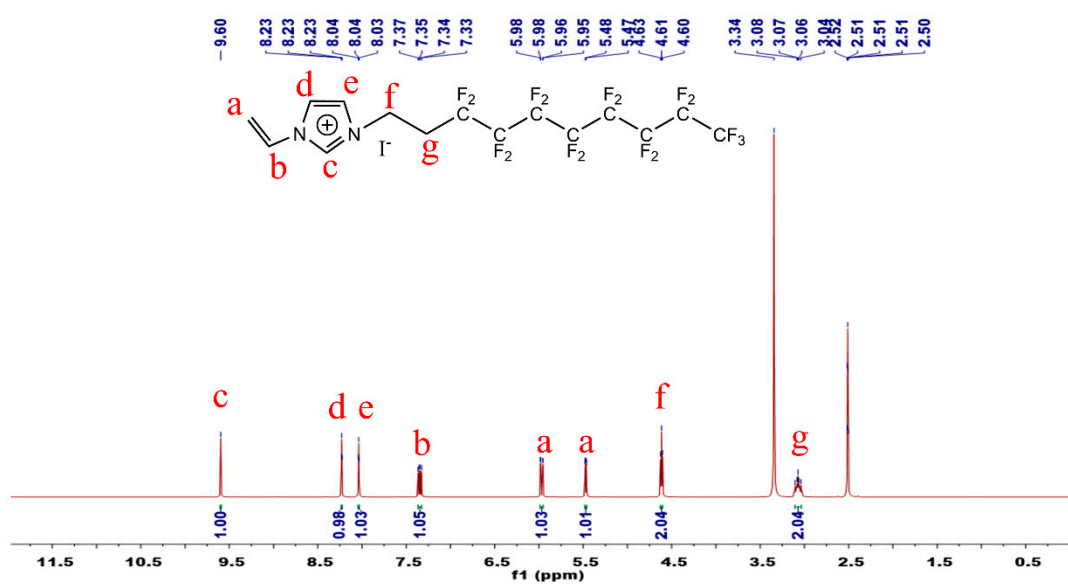


Figure S1. <sup>1</sup>H NMR and <sup>19</sup>F NMR spectra of [C<sub>8</sub>H<sub>4</sub>F<sub>13</sub>vim]<sup>+</sup>I<sup>-</sup>





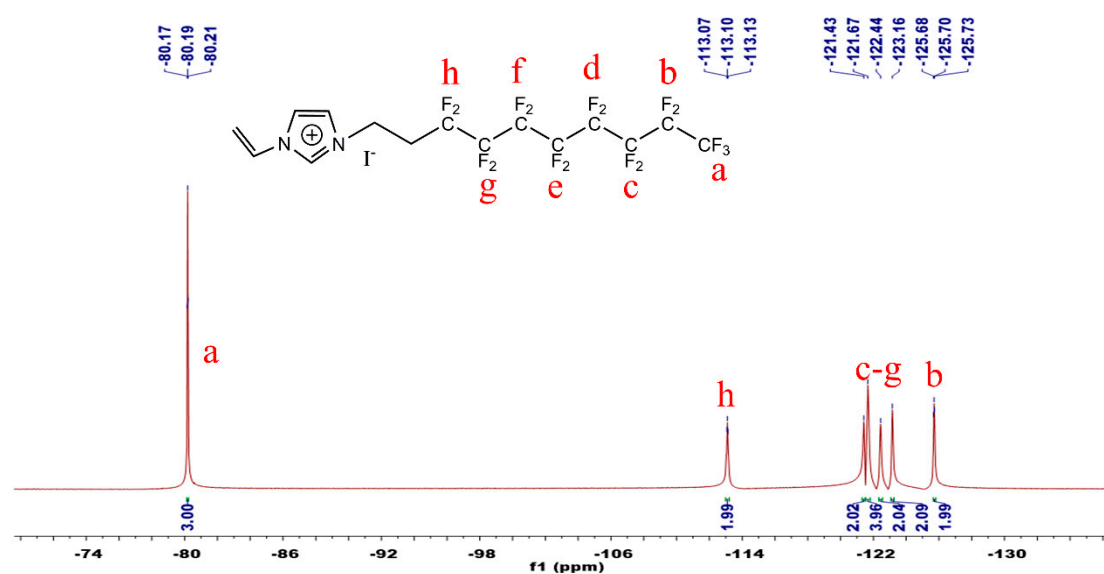


Figure S2. <sup>1</sup>H NMR and <sup>19</sup>F NMR spectra of  $[C_{10}H_4F_{17}vim]I$

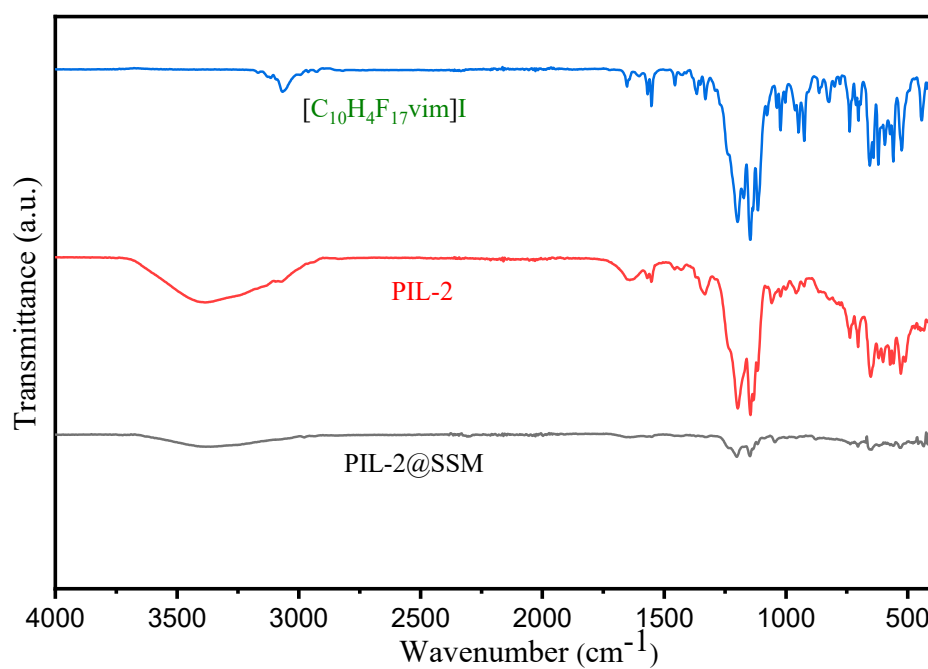


Figure S3. FTIR spectra of  $[C_{10}H_4F_{17}vim]I$



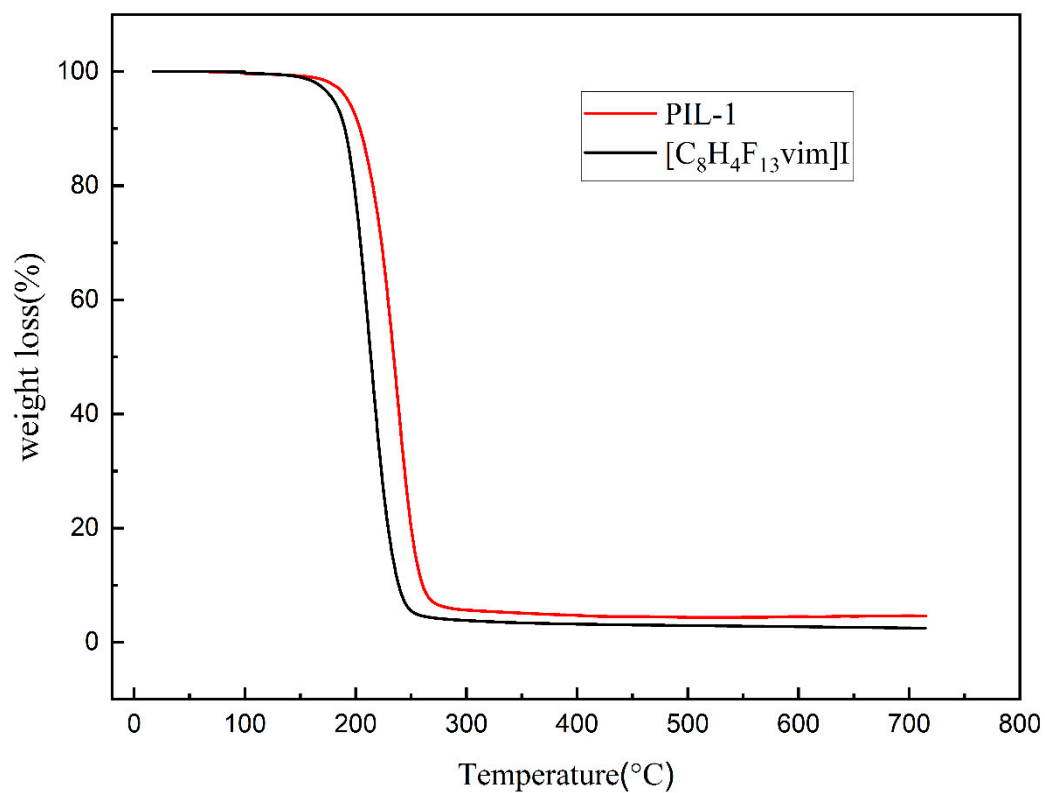


Figure S4. TGA curves of [C<sub>8</sub>H<sub>4</sub>F<sub>13</sub>vim]I and PIL-1

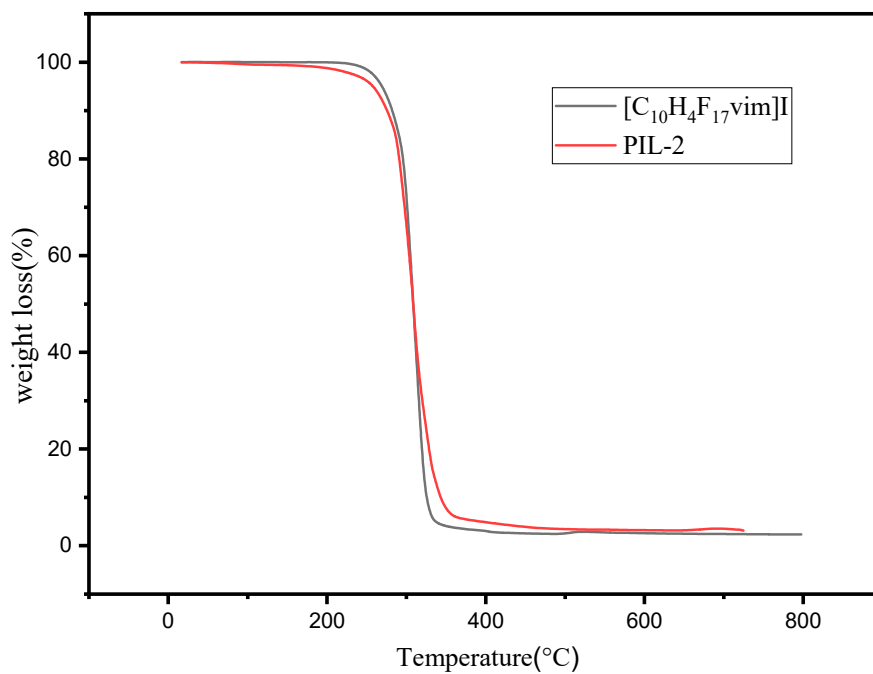


Figure S5. TGA curves of [C<sub>10</sub>H<sub>4</sub>F<sub>17</sub>vim]I and PIL-1



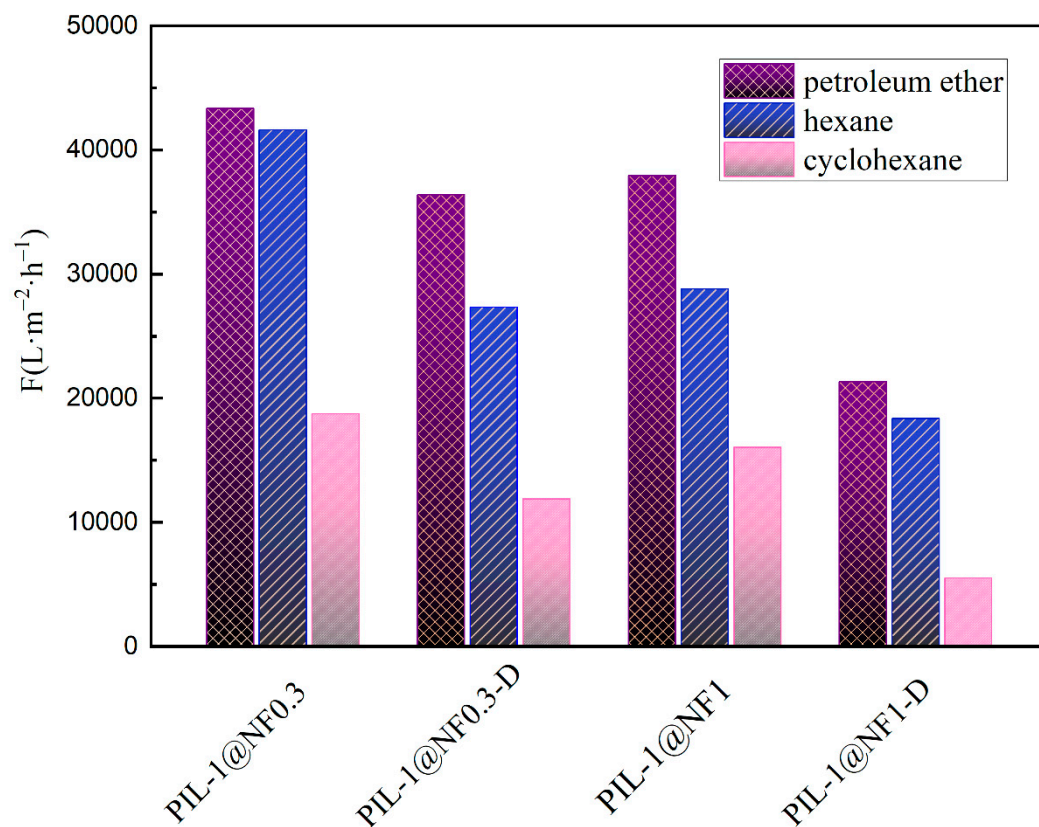


Figure S6. The permeate flux of oil phase for different materials

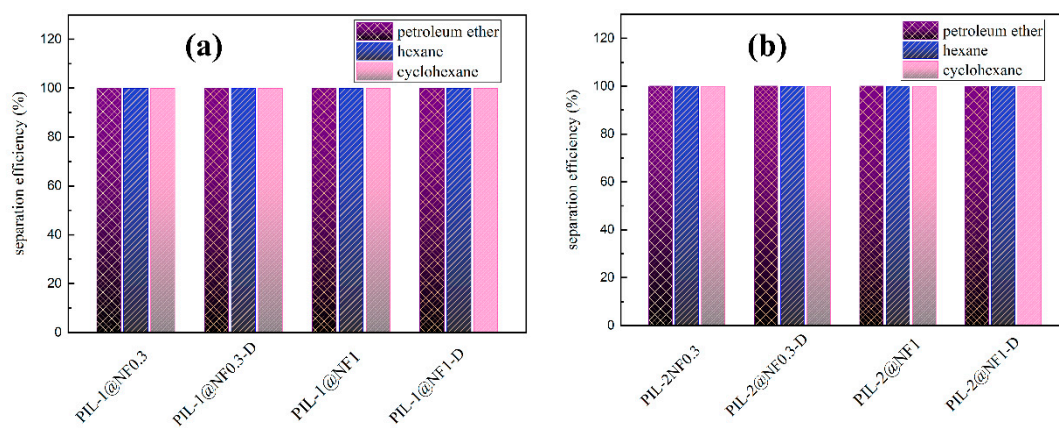


Figure S7. Separation efficiency of oil phase for different materials



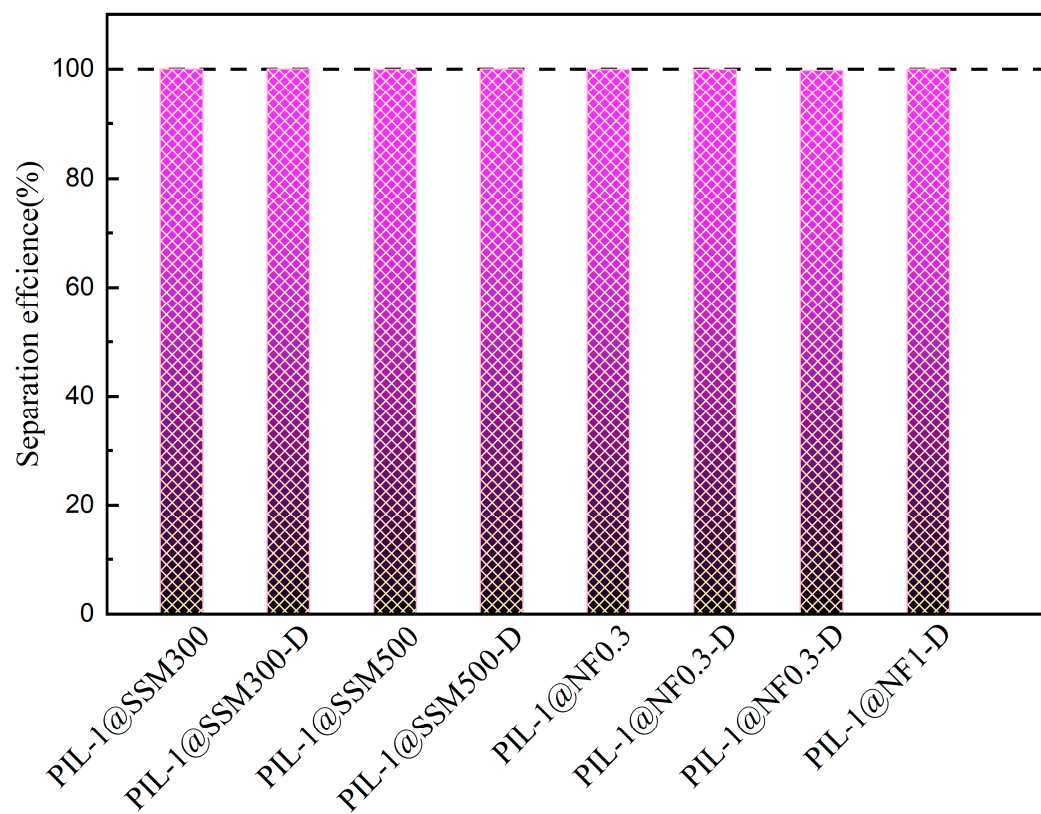


Figure S8. Separation efficiency of oil phase for different materials at least 20 times recycle