Supporting Information

100% Hyperbranched Polymers via Acid-Catalyzed Friedel-Crafts Aromatic Substitution Reaction

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Figure S1 FT-IR, $^1$H NMR and $^{13}$C NMR spectra of compound I.
Figure S2 FT-IR, $^1$H NMR and $^{13}$C NMR spectra of compound 2.
Figure S3 FT-IR, $^1$H NMR and $^{13}$C NMR spectra of AB$_2$ monomer.

Figure S4 $^1$H NMR spectra in CDCl$_3$ of products obtained by the model reaction between isobenzofuran-1, 3-dione (1 mmol) and anisole (2 mmol) in the presence of CF$_3$SO$_3$H (1 mL); (A) t = 30 min. (B) t = 5 h.

The model reaction between isobenzofuran-1, 3-dione (1 mmol) and anisole (2 mmol) is carried out in the presence of trifluoromethanesulfonic acid (TFSA) at 25 °C. The model reaction was monitored by using $^1$H NMR spectroscopy. The $^1$H NMR spectra show the formation of the expected diarylated products 3, and no peaks corresponding to the monosubstituted compounds and other side reaction products are observed. Based on these findings and our knowledge about the superelectrophile, we think that the condensation proceeds via alcohol intermediates, whose reactivity is much higher than that of the starting material.
Figure S5 FT-IR, $^1$H NMR and $^{13}$C NMR spectra of model compound 3.
Figure S6 FT-IR, $^1$H NMR and $^{13}$C NMR spectra of model compound 4.
Figure S7 FT-IR, $^1$H NMR and $^{13}$C NMR spectra of hyperbranched polymer a1.
Figure S8 FT-IR spectra of (A) AB₂ monomer, (B) model compound 4, and (C) hyperbranched polymer a₁.