

Supporting Information

Controllable Self-Assembly of Amphiphilic Dendrimers at Silica Surface: Effect of Molecular Topological Structure and Salinity

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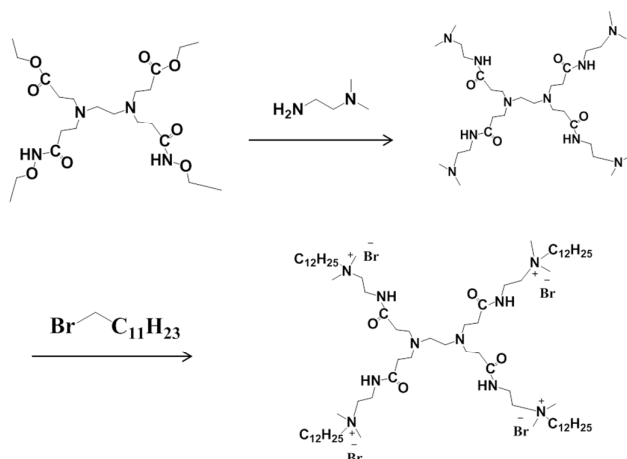
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1. Experimental Section

1.1. G_n QPAMC_m synthesis. The G_n QPAMC₁₂ was synthesized using 0.5 G, 1.5 G and 2.5 G PAMAM as core material. The tertiary amine was introduced by reacting with N,N-Dimethyl-1,2-ethanediamine. Then, the tertiary amine groups react with 1-bromododecane to form quaternary ammonium compound. All the products were recrystallized by acetone/ethanol repeatedly and characterized by ¹H NMR. Taking G_1 QPAMC₁₂ for example, a scheme of the reaction is shown in Scheme S1.



Scheme S1. The synthesis pathway of amphiphilic dendrimers G_1 QPAMC₁₂.

G_1 QPAMC₁₂: ¹H NMR (400 MHz, CDCl₃) δ 9.63-8.10 (m, 4H), 3.90 (t, J = 84.9 Hz, 16H), 3.47 (d, J = 46.1 Hz, 32H), 3.19 (s, 4H), 3.09 – 2.79 (m, 8H), 2.78 – 2.32 (m, 8H), 1.75 (s, 8H), 1.25 (s, 72H), 0.88 (t, J = 6.7 Hz, 12H).

G_2 QPAMC₁₂: ¹H NMR (400 MHz, CDCl₃) δ 9.45-8.39 (m, 8H), 8.05 (s, 4H), 3.74 (s, 32H), 3.51 (s, 24H), 3.32 (d, J = 16.6 Hz, 48H), 2.46-2.75 (t, 40H), 1.74-2.01 (s, 36H), 1.25-1.35 (m, 144H), 0.88 (t, J = 6.9 Hz, 24H).

G_3 QPAMC₁₂: ¹H NMR (400 MHz, CDCl₃) δ 8.72 (d, J = 60.5 Hz, 16H), 8.09 (s, 8H), 7.93 (s, 4H), 3.59 (d, J = 111.3 Hz, 120H), 3.31 (d, J = 38.3 Hz, 96H), 2.75 (s, 56H), 2.62 – 2.21 (m, 80H), 1.74 (s, 36H), 1.28 (d, J = 41.4 Hz, 288H), 0.86 (t, J = 6.6 Hz, 48H).

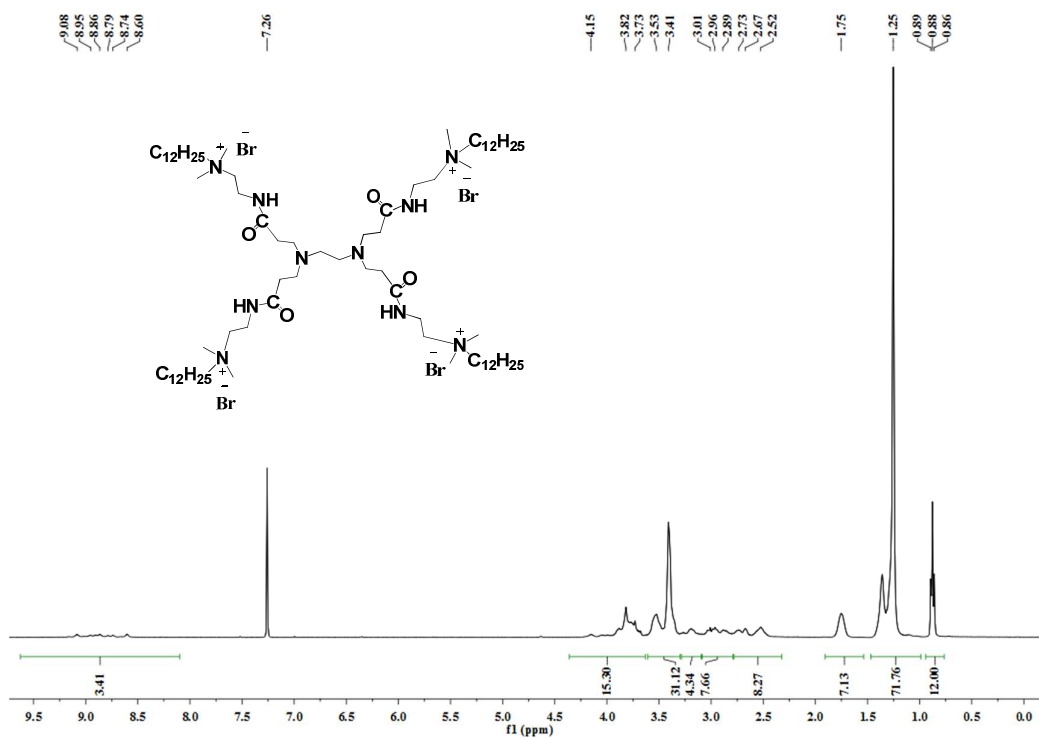


Figure S1. characterization data of G_1QPAMC_{12} by 1H NMR.

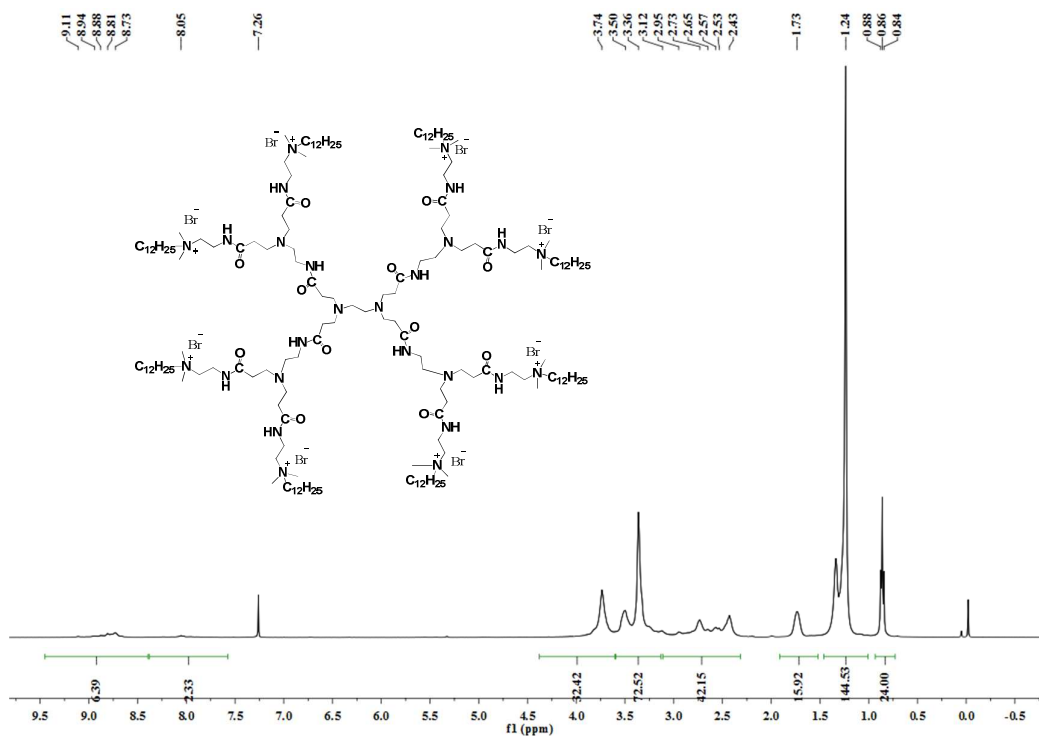


Figure S2. characterization data of G_2QPAMC_{12} by 1H NMR.

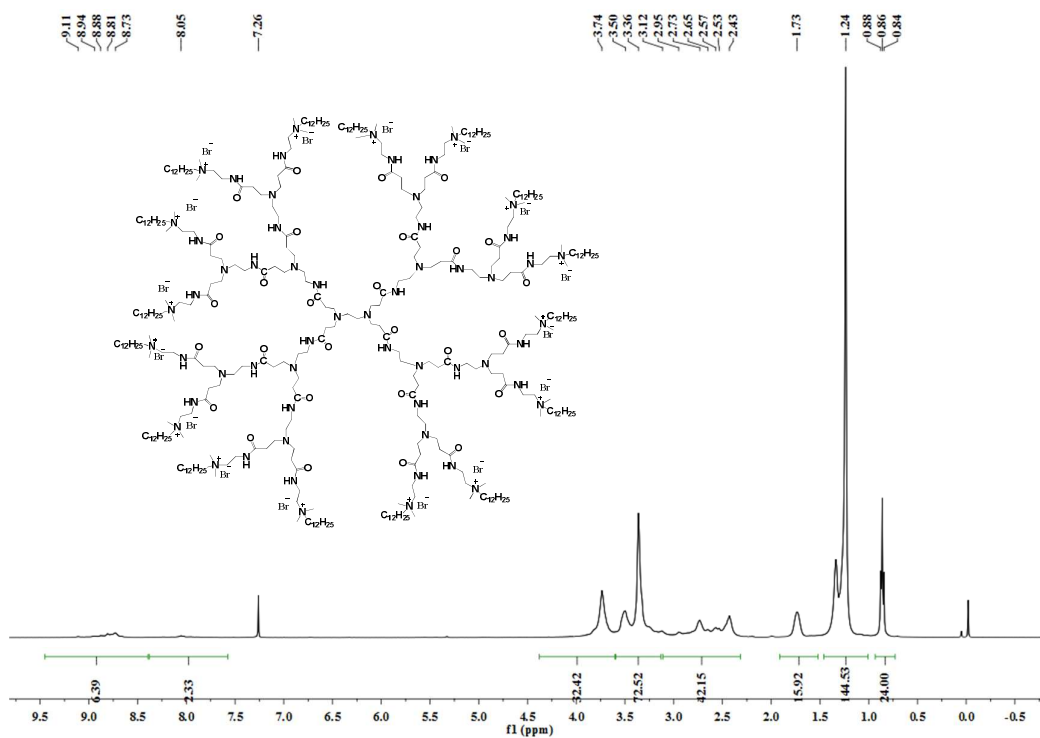


Figure S3. characterization data of G_3QPAMC_{12} by 1H NMR.

1.2. DLS Measurment

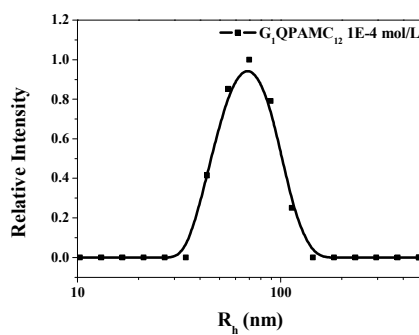


Figure S4. DLS measurements of the size distribution of G_1QPAMC_{12} at $1E-4$ mol/L.