

Supporting Information

An Efficient Approach to Synthesize Glycerol Dendrimers *via* Thiol-Yne “Click” Chemistry, and Their Application in Stabilization of Gold Nanoparticles with X-Ray Attenuation Property

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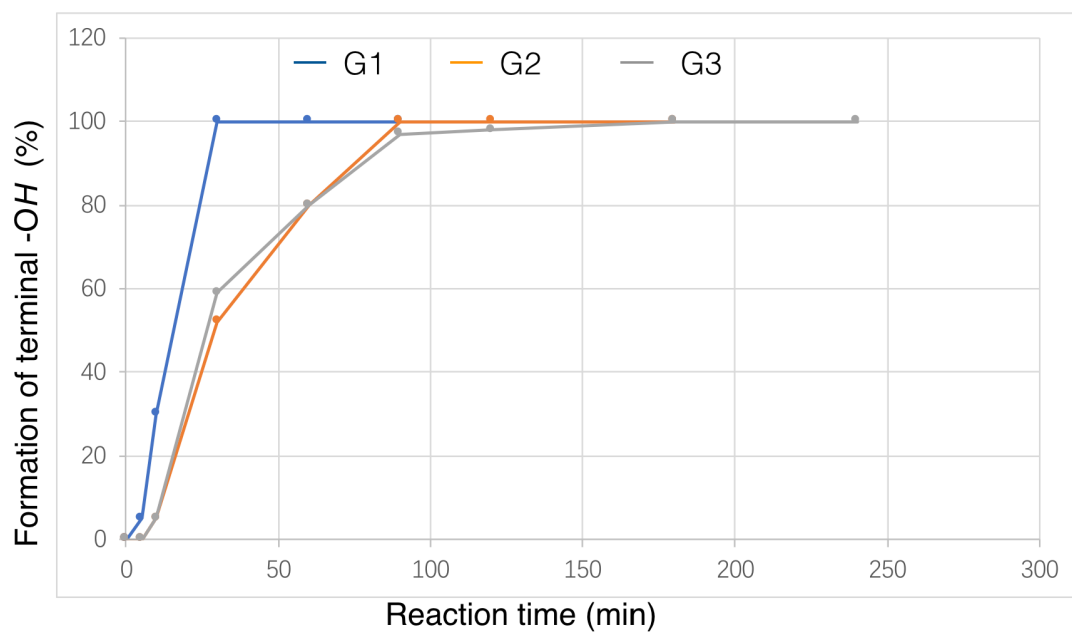


Fig. S1 Reaction time dependence of the formation of terminal -OH groups of G1, G2 and G3 dendrimers.

Characterizations of dendrimers

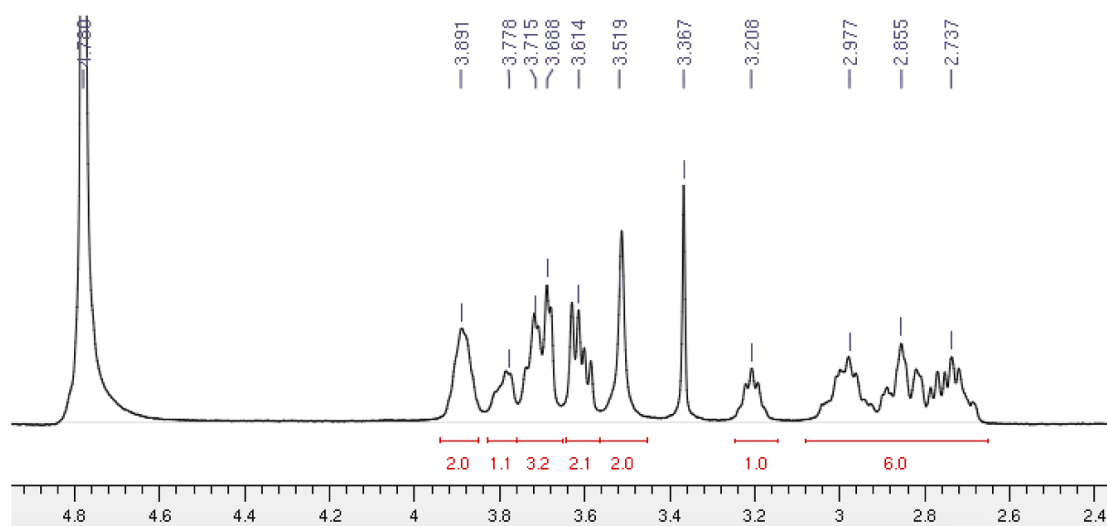


Fig. S2 ^1H NMR (D_2O , 400 MHz) spectrum of G1 dendrimer.

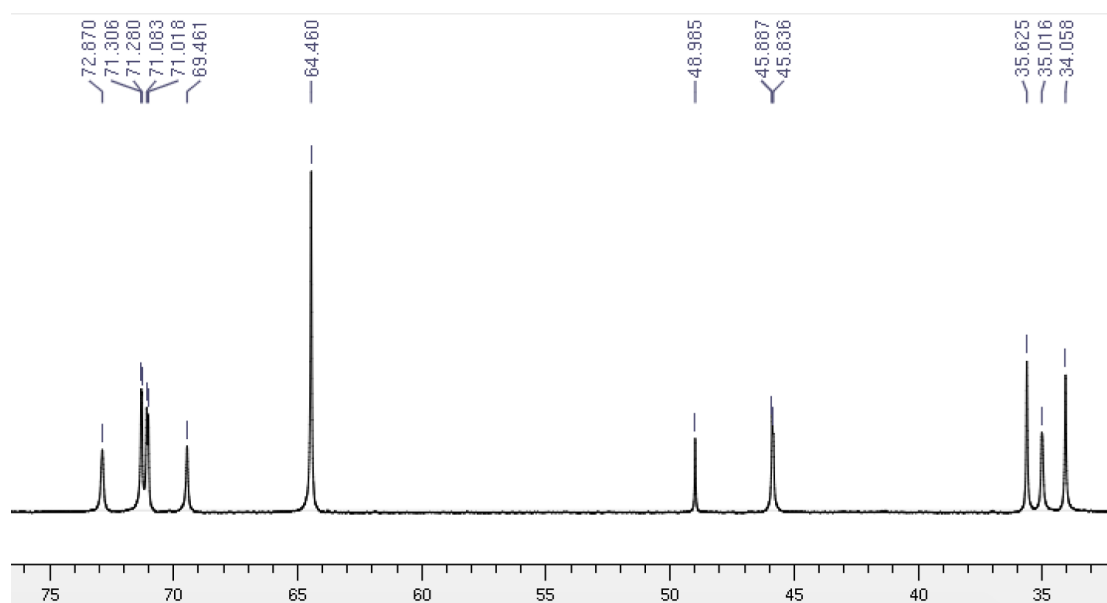


Fig. S3 ^{13}C NMR (D_2O , 125 MHz) spectrum of G1 dendrimer.

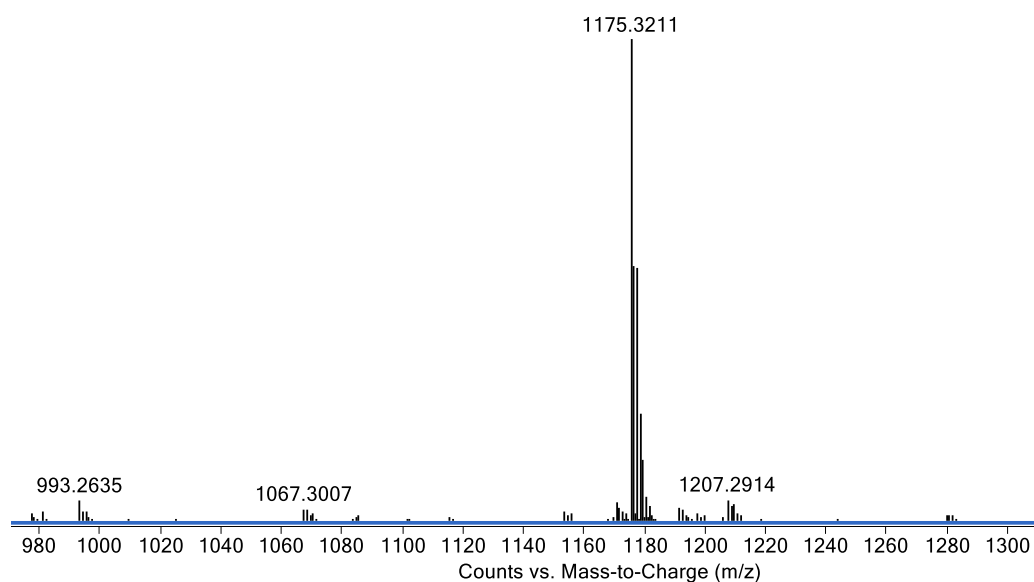


Fig. S4 ESI-MS spectrum of G1 dendrimer. Calcd. for $[M+\text{Na}]^+$: $\text{C}_{41}\text{H}_{84}\text{O}_{20}\text{S}_8\text{Na}$, 1175.32 m/z; found at 1175.32 m/z.

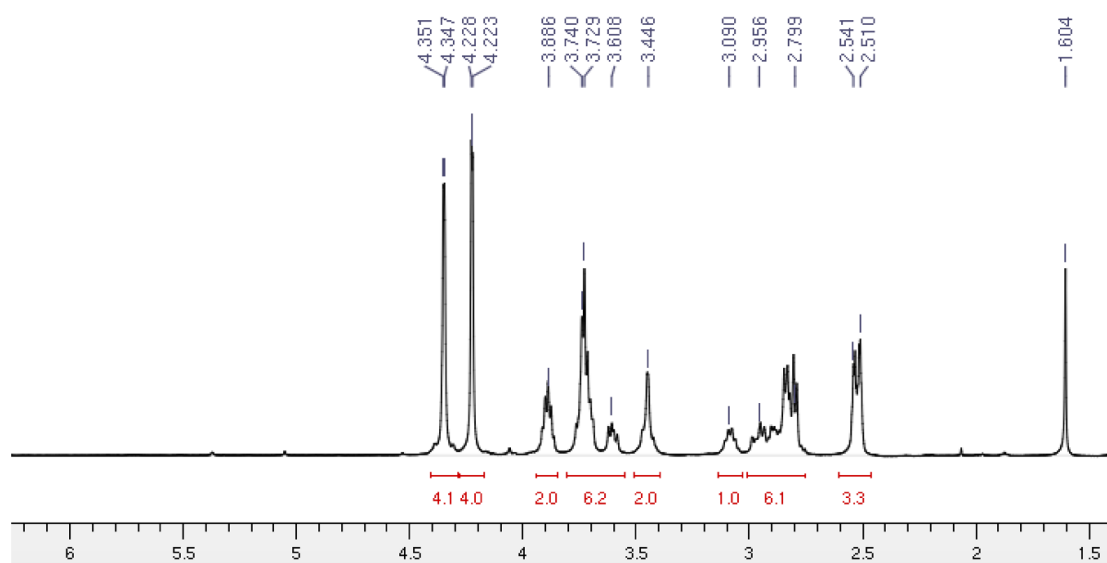


Fig. S5 ¹H NMR (CDCl₃, 400 MHz) spectrum of G1-A dendrimer.

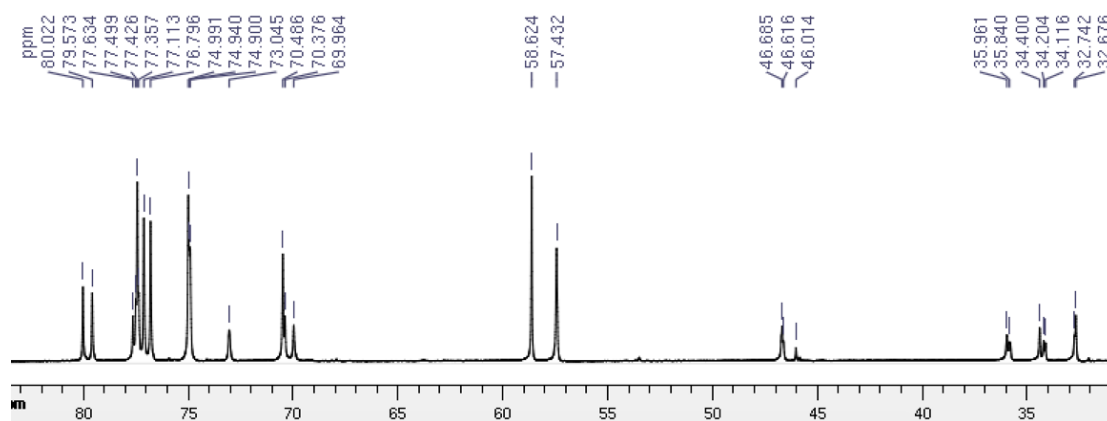


Fig. S6 ¹³C NMR (CDCl₃, 125 MHz) spectrum of G1-A dendrimer.

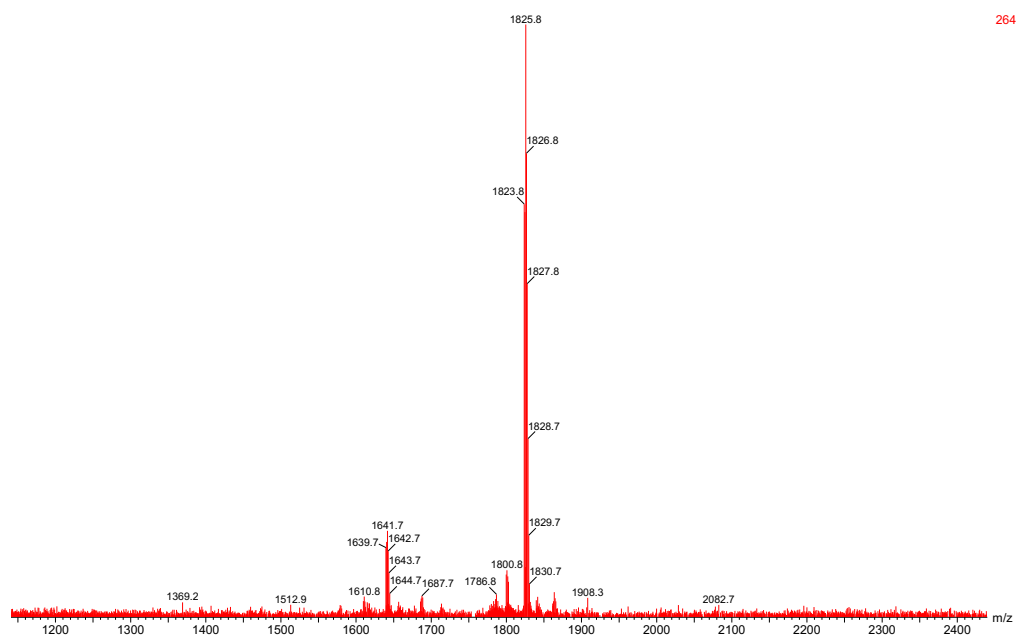


Fig. S7 MS (MALDI-TOF) spectrum of G1-A dendrimer. Calcd. for $[M+Cu]^+$: $C_{89}H_{116}O_{20}S_8Cu$, 1825.9 m/z; found at 1825.8 m/z.

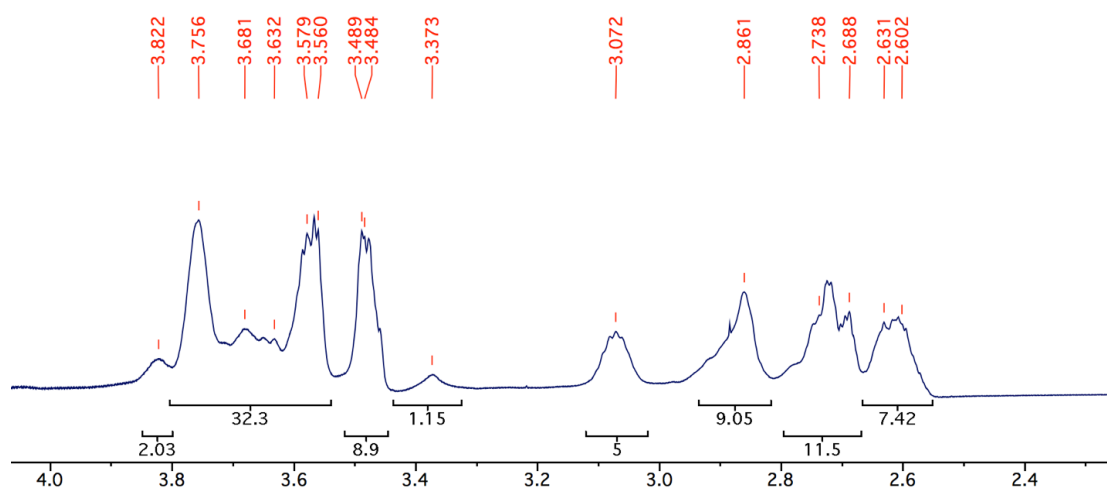


Fig. S8 1H NMR (D_2O , 400 MHz) spectrum of G2 dendrimer.

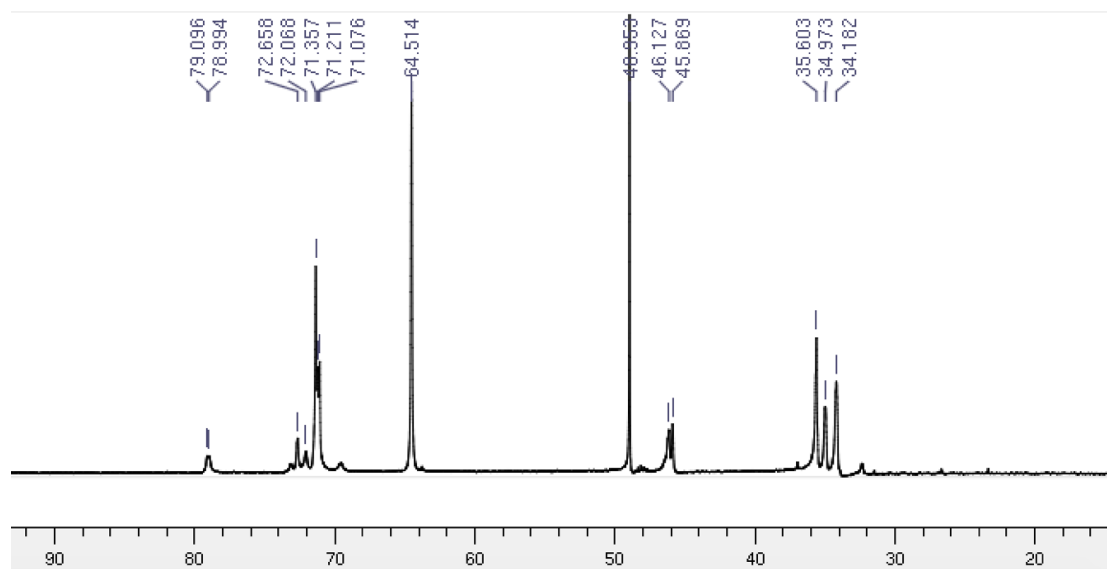


Fig. S9 ^{13}C NMR (D_2O , 125 MHz) spectrum of G2 dendrimer.

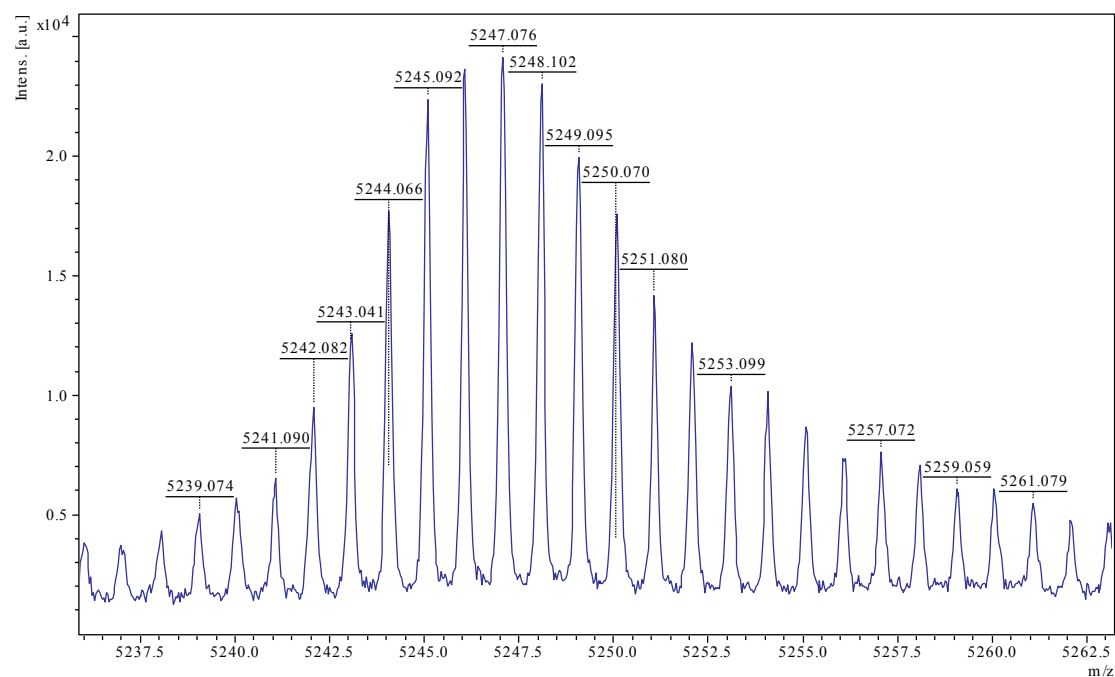


Fig. S10 MS (MALDI-TOF) spectrum of G2 dendrimer. Calcd. for $[M+\text{Na}]^+$: $\text{C}_{185}\text{H}_{372}\text{O}_{84}\text{S}_{40}\text{Na}$, 5246.31 m/z; found at 5247.07 m/z.

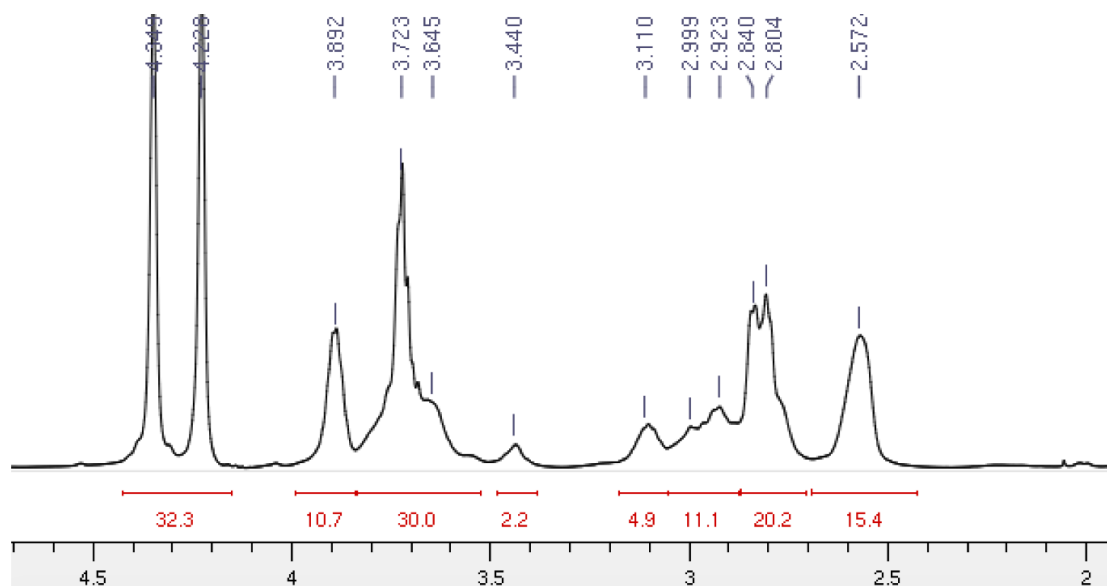


Fig. S11 ^1H NMR (CDCl_3 , 400 MHz) spectrum of G2-A dendrimer.

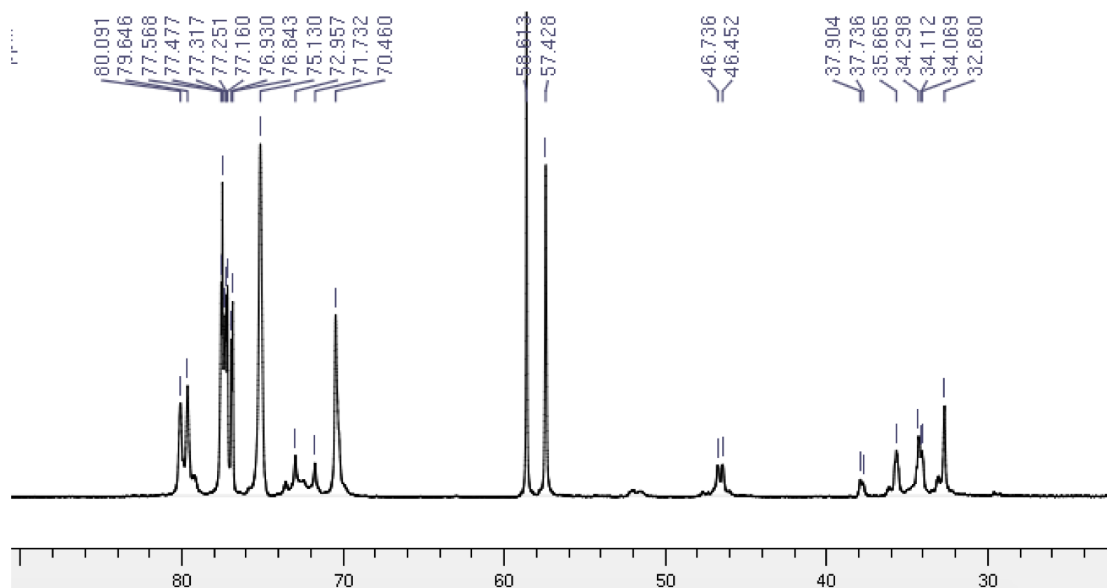


Fig. S12 ^{13}C NMR (CDCl_3 , 125 MHz) spectrum of G2-A dendrimer.

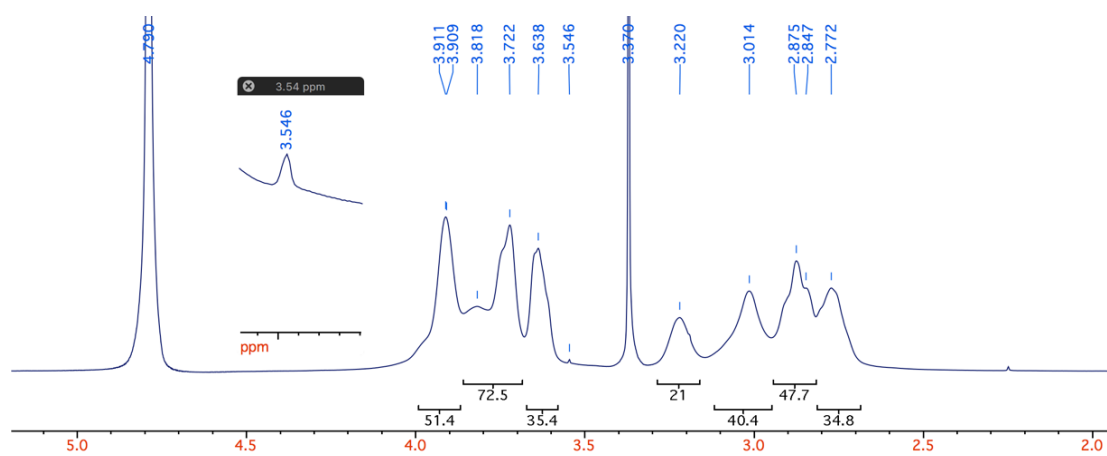


Fig. S13 ^1H NMR (D_2O , 400 MHz) spectrum of G3 dendrimer.

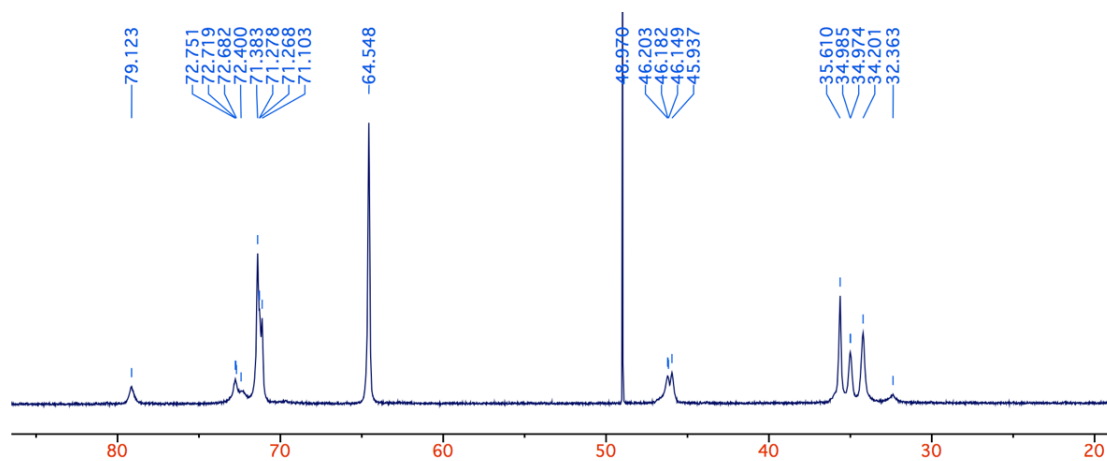


Fig. S14 ^{13}C NMR (D_2O , 125 MHz) spectrum of G3 dendrimer.

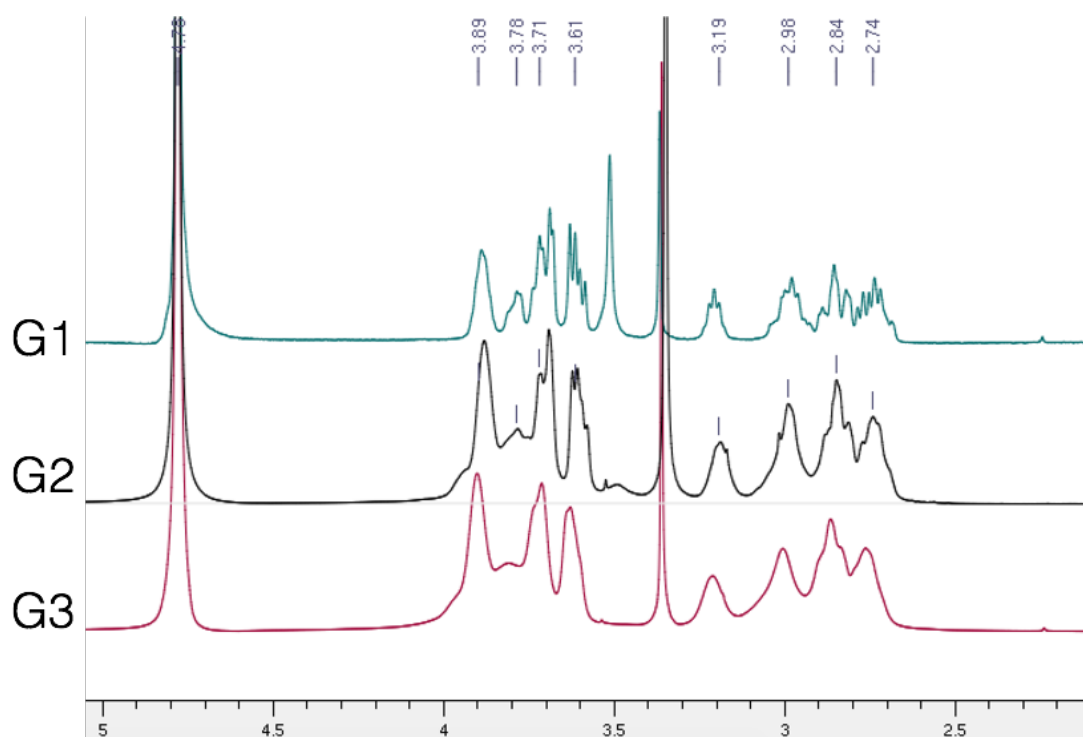


Fig. S15 ^1H NMR (D₂O, 400 MHz) spectra of G1, G2 and G3 dendrimers: a comparison.

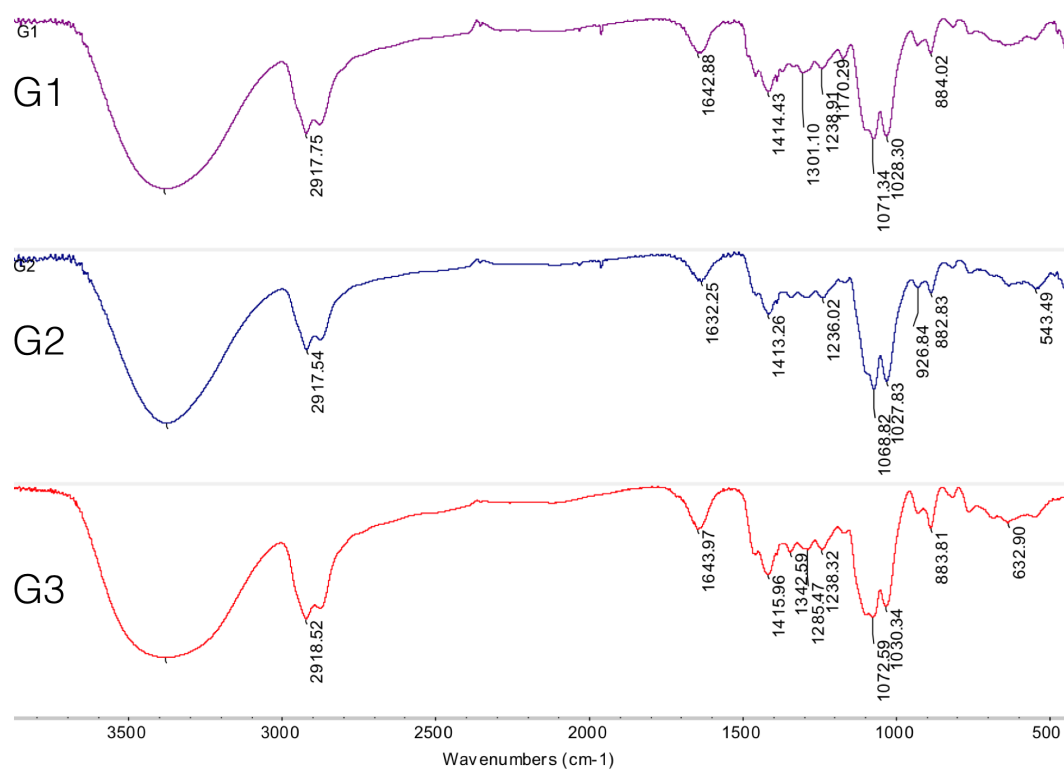


Fig. S16 FT-IR spectra of G1, G2 and G3 dendrimers.

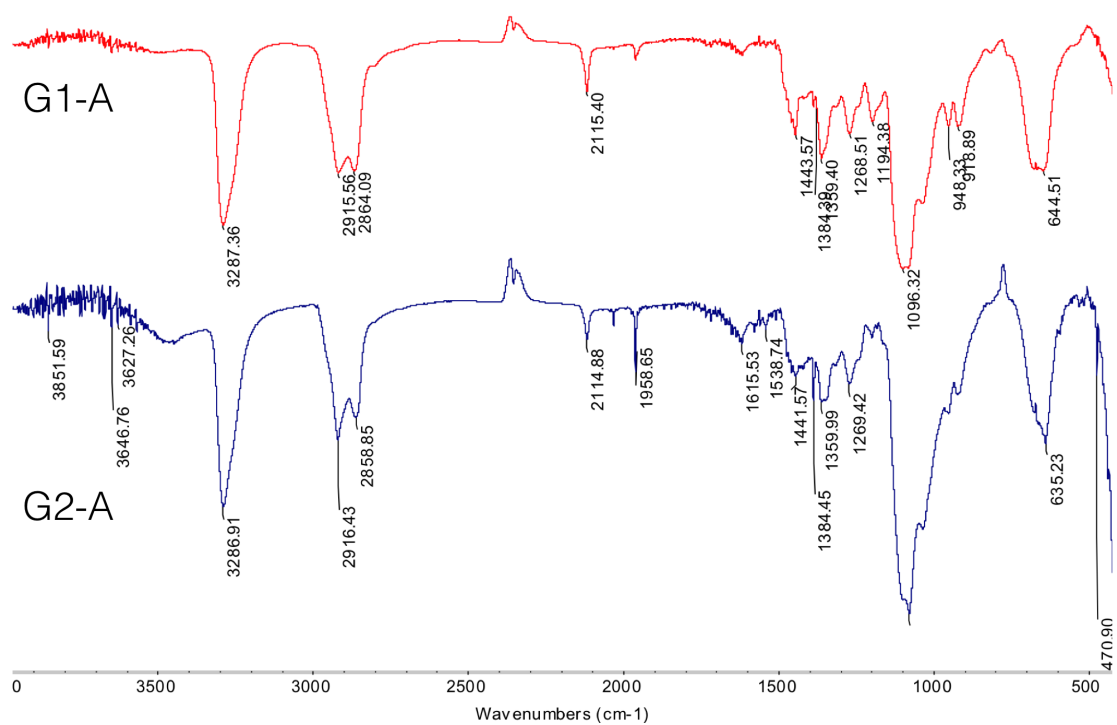


Fig. S17 FT-IR spectra of G1-A and G2-A dendrimers.

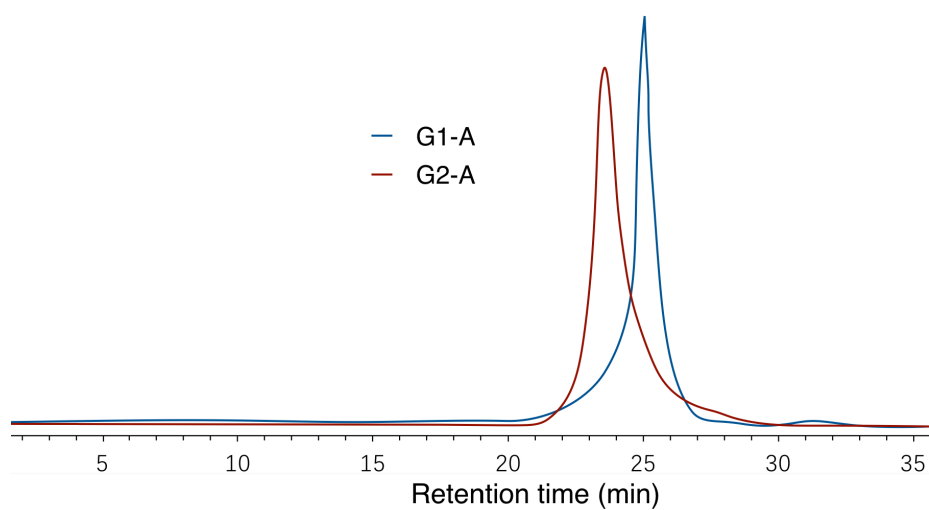


Fig. S18 GPC traces of G1-A and G2-A dendrimers (eluent: THF).

Characterizations of AuNPs

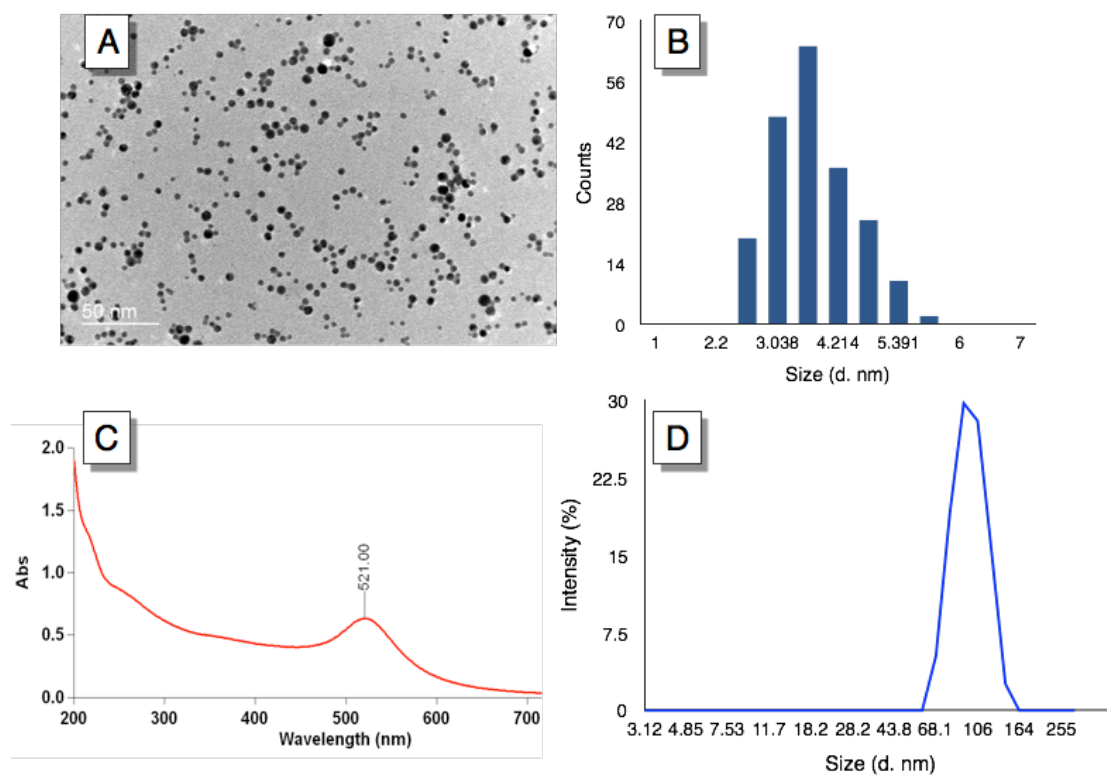


Fig. S19 (A) TEM image and (B) core size distribution (average size $d = 4.0$ nm), (C) the UV-vis spectrum (SPB at 521 nm), as well as (D) the DLS size distribution ($d = 134.8$ nm) of AuNP G1-8.

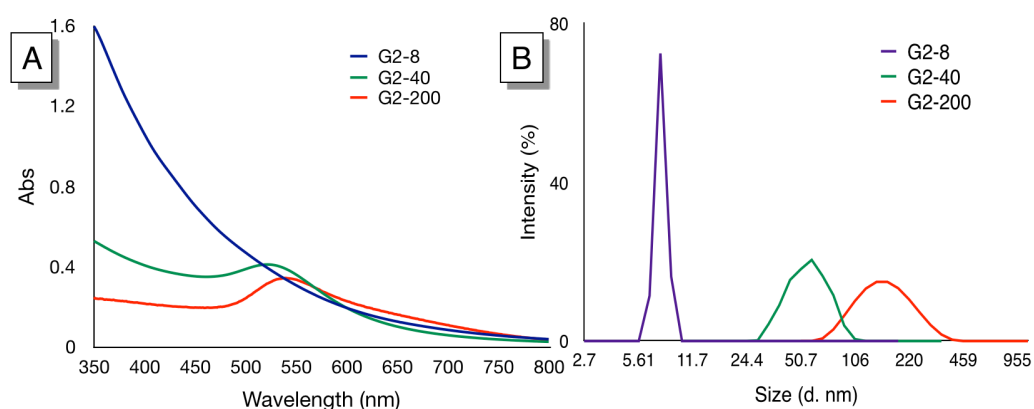


Fig. S20 (A) UV-vis spectra and (B) the DLS size distributions of AuNPs G2-8, G2-40 and G2-200, accordingly. Surface plasmon band was found at 540 nm for G2-200 and 523 nm for G2-40. DLS average size: G2-8, $d = 8.2$ nm; G2-40, $d = 54$ nm; G2-200, $d = 148.8$ nm.

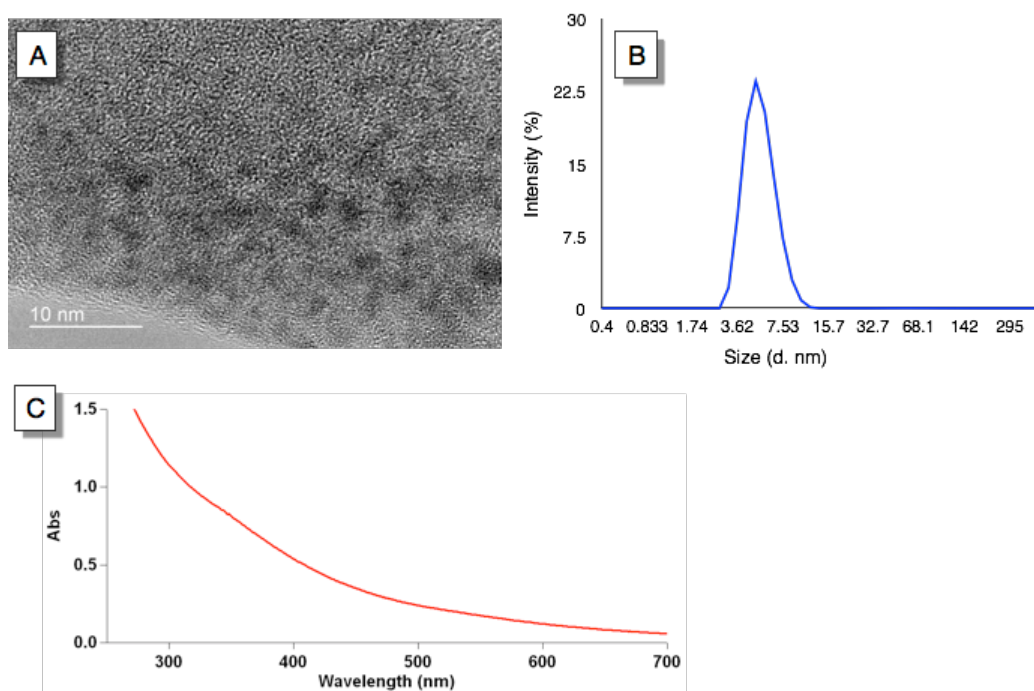


Fig. S21 (A) TEM image (average $d = 1.3$ nm), (B) DLS size distribution ($d = 7.2$ nm), and (C) the UV-vis spectrum of AuNP G3-8.

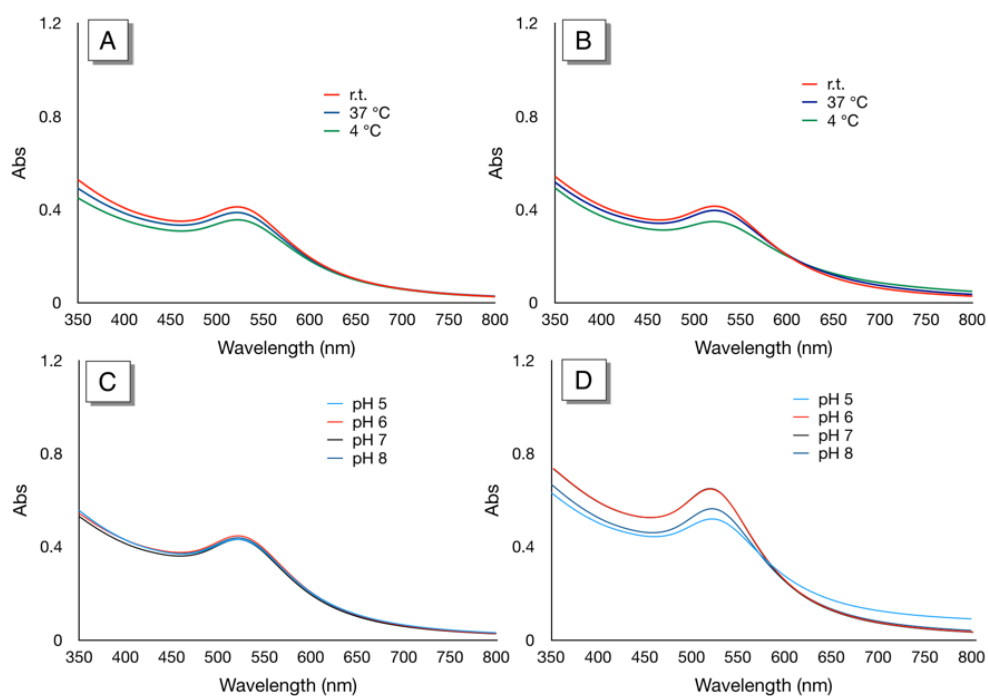


Fig. S22 UV-vis spectra of AuNP G2-40 in aqueous solution at different temperatures after (A) 1 h and (B) 24 h; and in PBS solution under various pH conditions after (C) 1 h and (D) 24 h.