Electronic Supplementary Material (ESI) for Polymer Chemistry.

Supplementary information

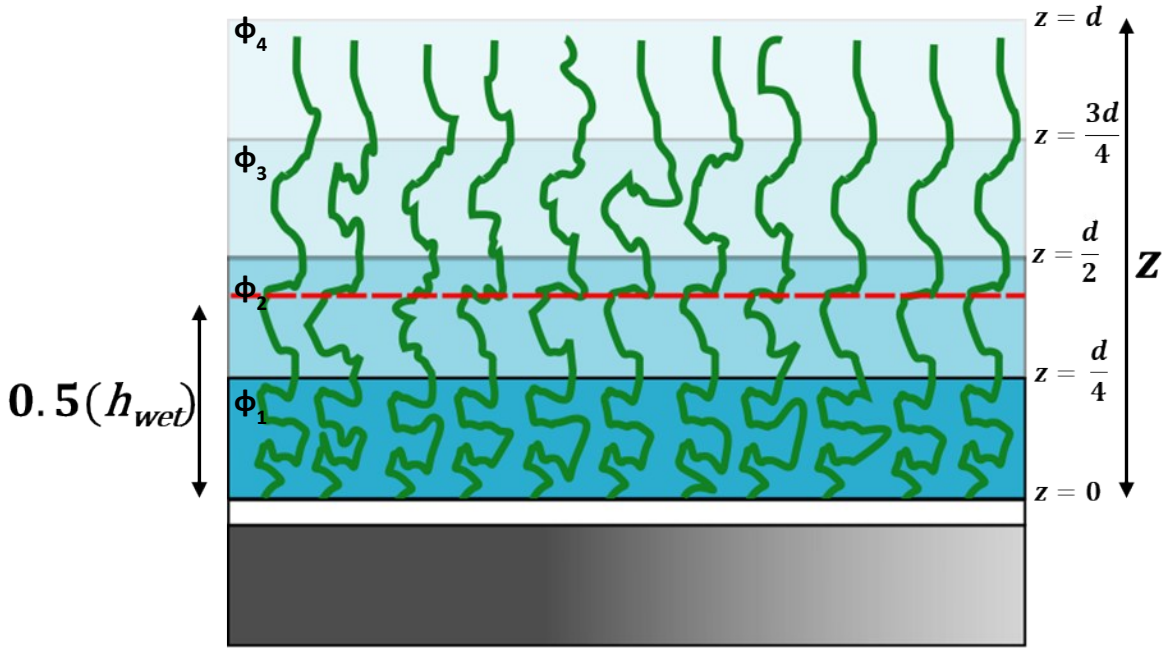

Figure S1: A schematic diagram of the ellipsometric model used for polymer brushes swollen in water. Each layer (z) is equal in thickness but has a different density of polymer (φ) within it. These values can be used to calculate the brush thickness (h_{wet}) of polymer within the solution using Eq. 1. The equations used to derive the wet thickness can be found in the experimental section.

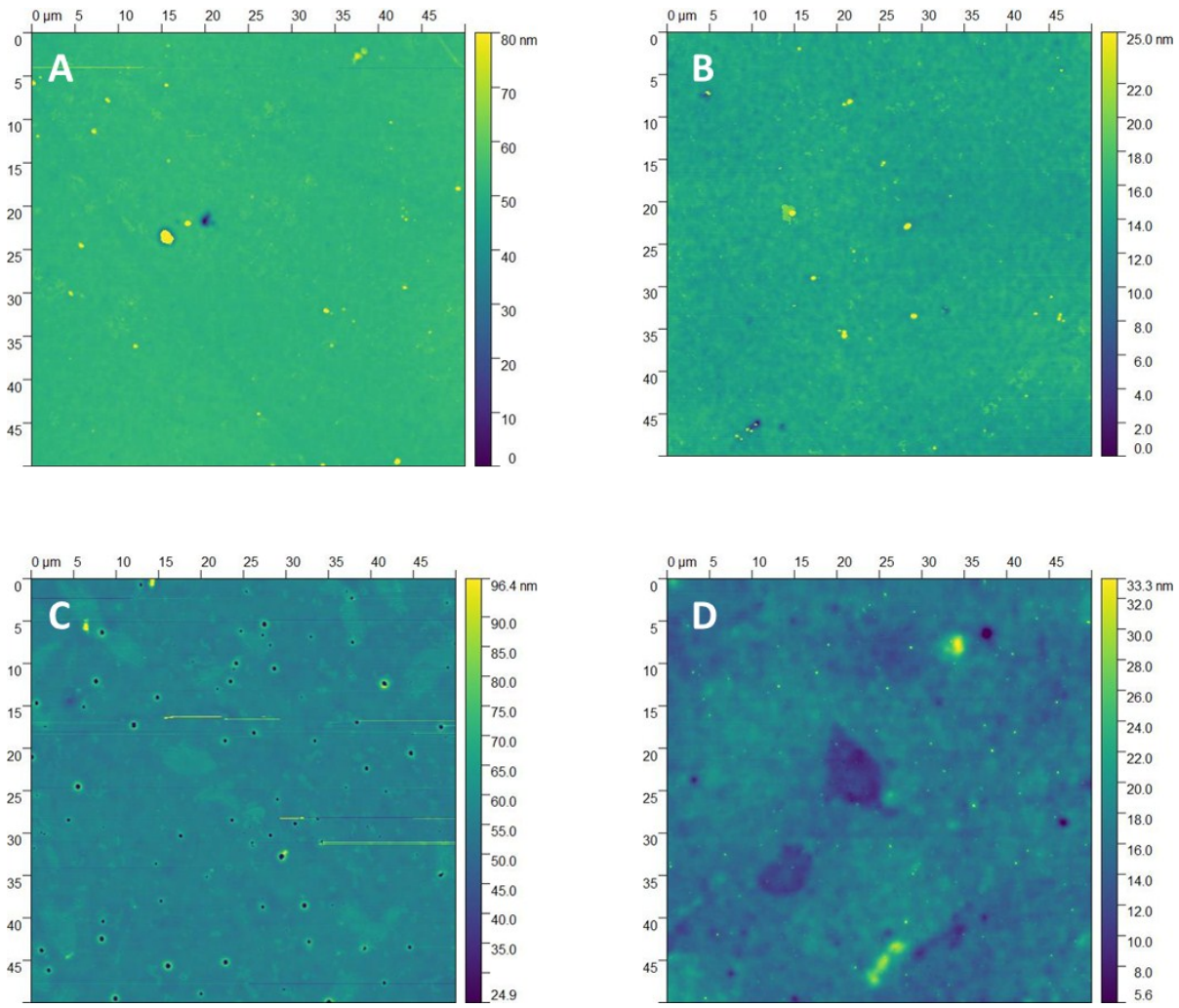

Figure S2: Representative AFM images taken over a 2500 μm^2 area to gather data for both the average roughness and root mean square roughness, shown in Table 3.1, for samples **(A)** $CuBr_2$ catalyst source in deionised water, **(B)** $CuBr_2$ catalyst source in tap water, **(C)** Copper wire catalyst source in deionised water and **(D)** Copper wire catalyst source in tap water.

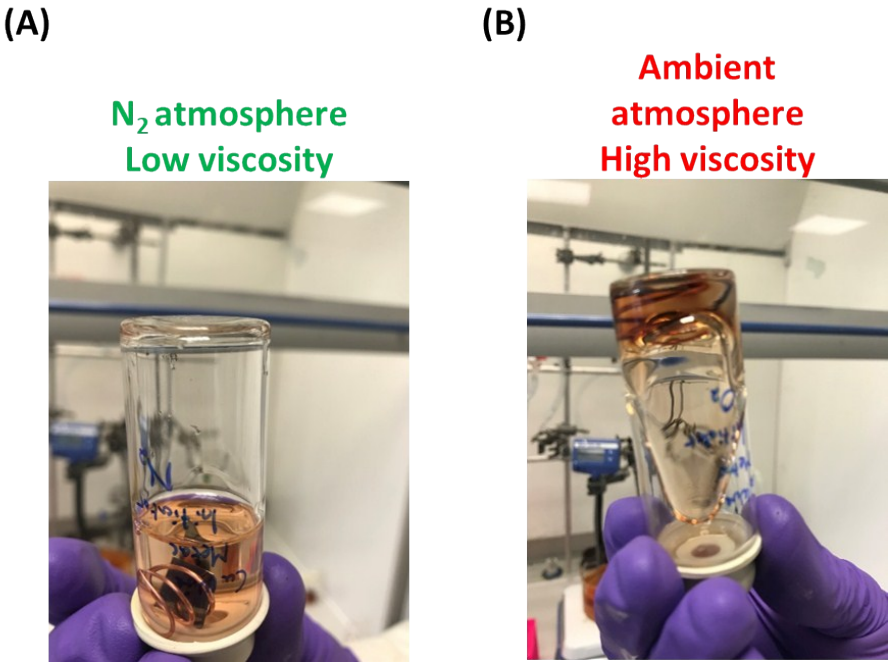

Figure S3: Images show the difference in viscosity of the monomer solution after 24 hours for **(A)** a solution degassed with nitrogen and left under nitrogen pressure and **(B)** a solution that was not degassed and left in ambient conditions.

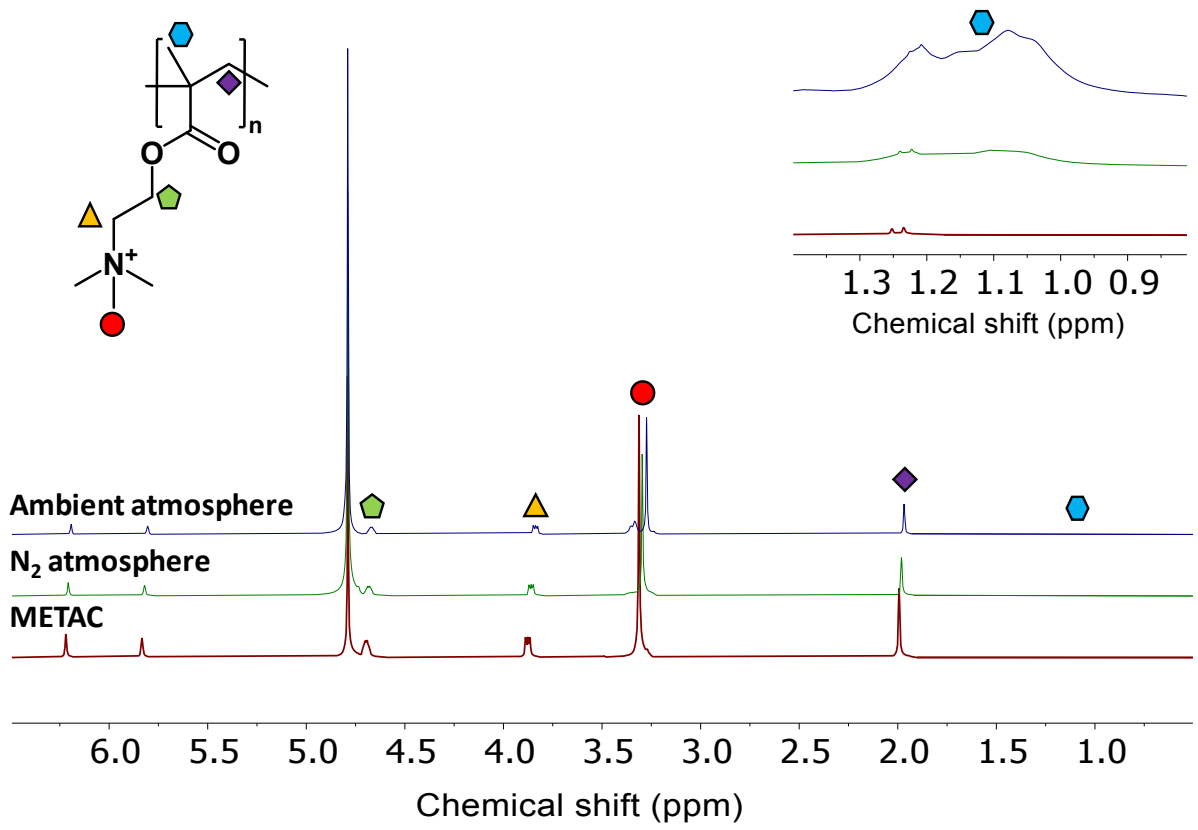

Figure S4: ^{1}H NMR spectra of METAC monomer solution taken after 24 hours. The METAC solution was mixed with BPY, Ascorbic acid and added to tubes that contained 10 cm of copper wire. A broad peak is observed at 1.0 to 1.3 indicative of polymerisation due to a Fenton-type reaction. A control of METAC monomer is shown with no polymer peak.