

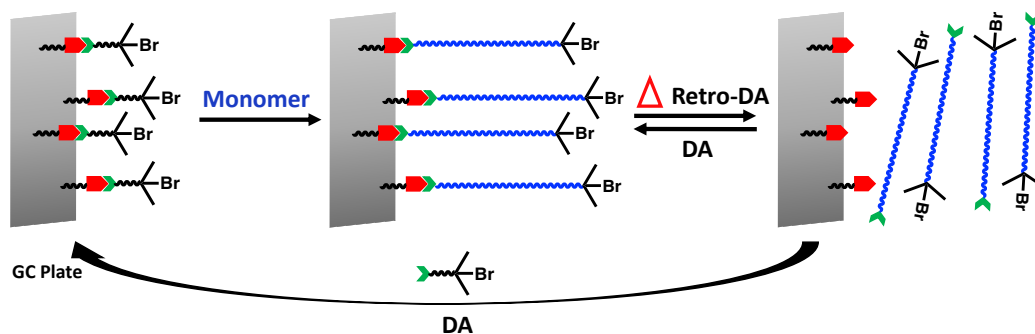
Reusable, Responsive Brush Polymer on Surface

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Surface attached polymer brushes has been applied in various fields such as protein binding, metal coating, nanoparticles assembly and surface wettability tuning due to strong adhesion [1]. Most are not reusable after application. My research goal is synthesis of polymer brush with reversible attachment on the surface of glassy carbon (GC) plates through grafting from processes. The brushes were synthesized by electro-chemical reduction reaction of furan functionalized diazonium salt [2]. Immobilization of initiator through DA cycloaddition and a grafting from approach using ARGET ATRP of methacrylates. The brushes linked with thermally reversible DA units can be removed on demand by retro-DA reaction. The furan functional GC plates can be reused for further applications. Thus, creating a strong adhesive with on-demand disassembly and reversibility.

References:

[1] X. Zhou, X. Liu, Z. Xie, Z. Zheng, *Nanoscale* **3**, 4929 (2011).

[2] M. Lillethorup, K. Shimizu, N. Plumere, S. U. Pedersen, K. Daasbjerg, *Macromolecules* **47**, 5081 (2014).