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Role of monomer sequence and backbone structure in polypeptoid and polypeptide polymers for anti-fouling applications ANASTASIA PATTERSON, GEORGIOS RIZIS, UC Santa Barbara, BRANDON WENNING, Cornell University, JOHN FINLAY, Newcastle University, CHRISTOPHER OBER, Cornell University, RACHEL SEGALMAN, UC Santa Barbara — Polymeric coatings rely on a fine balance of surface properties to achieve biofouling resistance. Bioinspired polymers and oligomers provide a modular strategy for the inclusion of multiple functionalities with controlled architecture, sequence and surface properties. In this work, polypeptoid and polypeptide functionalized coatings based on PEO and PDMS block copolymers were compared with respect to surface presentation and fouling by *Ulva linza*. While polypeptoids and polypeptides are simple isomers of each other, the lack of backbone chirality and hydrogen bonding in polypeptoids leads to surprisingly different surface behavior. Specifically, the polypeptoids surface segregate much more strongly than analogous polypeptide functionalized polymers, which in turn affects the performance of the coating. Indeed, polypeptoid functionalized surfaces were significantly better both in terms of anti-fouling and fouling release than the corresponding polypeptide-bearing polymers. The role of specific monomer sequence and backbone chemistry will be further discussed in this poster.

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