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Degrafting of covalently grafted polyelectrolyte and polybetaine systems from flat surfaces CASEY GALVIN, JAN GENZER, Department of Chemical & Biomolecular Engineering, North Carolina State University — We present a systematic study elucidating the role that grafting density, molecular weight, polymer and initiator chemistry and solution temperature have on the stability of polyelectrolytes and polybetaines grafted covalently to flat substrates. We find that increased stretching of the grafted chains away from the surface due to the presence of charges leads to higher levels of instability. These results suggest a degrafting mechanism in aqueous media wherein amplified tension at the point of grafting activates the hydrolysis of an ester bond in the initiator. We offer additional experimental insight into the nature of trace amounts of water retained in the incubated polyelectrolyte brushes following typical drying strategies, and the effect this moisture, along with the other system parameters, has on the resulting polymer brush morphology.

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