



CMCC Mechanochemistry Discussions

Online Seminar Series

Mechanochemistry of Solvent-Swollen Surface-Grafted Polymer Brushes, and Polymer Networks

**Livestreaming at
10:00 AM (CT)
THURS., November 20, 2025**

on the CMCC YouTube Channel:

<https://www.youtube.com/channel/UC7eCYPKbGTKpgO7W2bNABxg>



Dr. Harm-Anton Klok
EPFL, Lausanne
<https://people.epfl.ch/harm-anton.klok?lang=en>

Mechanical forces have been known for a long time to facilitate bond cleavage reactions in polymer materials. Typically, the impact of force on the stability and reactivity of polymers is investigated by subjecting polymers to relatively high mechanical forces such as those that are the result of ultrasonication, high shear flow fields, or that are exerted on polymers during tensile testing or mastication processes. Much less investigated, in contrast, are the effects of much weaker forces, such as those that are generated by solvent swelling of crosslinked networks, on the stability of polymers.

This talk will highlight recent work from our laboratory that indicates that solvent-swelling of surface-grafted polymer brush films, or of covalently crosslinked polymer networks, mechanochemically accelerates chemical reactions, which can lead to bond cleavage at polymer brush interfaces, or trigger polymer network degradation.



The CMCC is supported by the Division of Chemistry of the National Science Foundation under grants: 2023644 (Phase I) and 2303044 (Phase II).

