

Eawag Seminar Invitation

Novel cyclodextrin-based adsorbents to remove organic micropollutants from water

Speakers **Dr. Damian Helbling, Cornell University, USA**

When **March 25, 16.00 – 17.00**

Where **Online via Zoom, contact seminars@eawag.ch for access details.**

Abstract The widespread occurrence of organic micropollutants in water resources around the world has motivated research into the development of novel remediation technologies. Activated carbon adsorption processes have been widely adopted by water and wastewater treatment plants for the removal of organic micropollutants and for remediation of contaminated groundwater. However, activated carbon adsorbents are characterized by a number of deficiencies that motivates research on alternative adsorbent materials. Over the past five years, our research team has developed a promising class of cyclodextrin-based adsorbents that can be rationally designed to target specific types of organic micropollutants. We have optimized these adsorbents to obtain high affinity for micropollutants that exhibit a broad range of physicochemical properties. Recent advances have resulted in the synthesis of cyclodextrin-based polymer adsorbents that have high affinity for a variety of per- and polyfluoroalkyl substances (PFASs) including those with varying chain length, varying hydrophilic head groups, and varying charge state. We have characterized the performance of these adsorbents in a variety of aquatic matrices and have benchmarked their performance against a variety of more conventional adsorbent materials. A startup company has been formed to manufacture and commercialize the most promising cyclodextrin-based adsorbents for implementation in adsorption-based water treatment processes. This seminar will highlight the evolution of our cyclodextrin-based adsorbents and describe current advances in this emerging technology.