

## **Biogeochemical cycling in the *Plastisphere***

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Marine plastic debris has emerged as a global challenge and potential marker of the Anthropocene. The introduction of these synthetic particles to aquatic systems raises environmental health concerns, but these particles may also alter the transport and burial of microbial organic matter and influence global biogeochemical cycles. While biofilm found on marine plastic implies a new ecological niche, named the *Plastisphere*, our knowledge of marine plastic-microbe interaction is still nascent. Plastic acts as a vector for microbial communities in the marine environment, offers a surface for abiotic and biotic element cycling, and may even be a microbial carbon source. Indeed, microorganisms may play a key role in degrading, transporting and incorporating (micro)plastic into biogeochemical cycles. We combine microbial community studies, bioimaging, isotopic and elemental analysis to elucidate plastic-associated element cycling. Focus on the interaction between microbes, the plastic surface and their environment, as well as the effect of transport and diagenesis will inform the influence of these particles on element cycling (C, P, S) in the Anthropocene.