

Microplastics: fate and transportation

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Abstract: While microplastics arise public concerns, the research is still in the infant stage, including characterisation, fate, transportation and remediation etc. In particular, to shield light on the research, a robust and well-established characterisation should be developed and accepted by the microplastics community. Currently there are lots approaches to test microplastics. The problem is, the variation on the results from different testing approaches leads to the difficulty to compare them, needless to say nanoplastics. The reason to test the nanoplastics is because, no matter it is macroplastics (> 5 mm) or microplastics (1 μm – 5 mm), if detected in environment, they might ultimately transform to nanoplastics (< 1 μm) that we currently have a very limited knowledge, mainly due to the absence of the approach to conduct the test. We made progress in this field. We validated our approach to study the microplastics fate and transportation, such as what happens in our garden. The results suggest that, after several years (7 years), millions of microplastics / nanoplastics have been released in our garden from the macroplastics, including the discarded bubble wrap, seed fabric, irrigation pipe etc.



My research covers several multi-disciplines, from electrochemistry to prepare nano/microporous materials including semiconductors and noble metals, to sensors to monitor pollutants from environment using SERS (surface-enhanced Raman scattering), AIE (aggregation induced emission), electrochemistry, nano-device (nanowire, nanogap, nanomembrane etc.), to environmental monitoring and remediation using advanced electrochemistry, nano-materials, lab-on-chip etc., to development of portable devices for field test and application. To strengthen my background, I have worked in several countries including China (-2004), Germany (2004-2006), Singapore (2006-2010) and Australia (2010-).