



Development of fluorescent polystyrene microspheres as tracers for soil colloids

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Interest in colloid transport in porous media has been prevalent since the realisation that they have rapid transport times through the vadose zone facilitating the transport of contaminants that bind to their surface, and reducing soil permeability due to their deposition.....[1, 2]. A common example is the ability of colloids to transport phosphorus from agricultural lands off-site to water bodies causing ecological problems such as eutrophication.....[3]. These issues are common to all soil types due to the ubiquity of soil colloids.

Fluorescent polystyrene microspheres (FMS) are quickly and easily detected by spectrofluorimetry and comprise a potentially useful tracer for soil colloid studies. Due to being the same size as colloidal particles they exhibit similar transport behaviours. They have rapid and inexpensive analysis and can yield spatially precise data relating to colloid transport pathways, as well as the effects of colloid size and surface properties upon transport times.

We introduce FMS as a tracer for colloids and review the suitability of the acetone dissolution method developed by Ward et al (1997)[4] for the extraction of FMS from aqueous samples. We also provide methods for the removal of sediment and dissolved organic matter from samples prior to analysis and report limits of detections found using the method developed by Hubaux and Vos (1970)...[5].

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