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**Tuning inter-virus interactions in natural aquatic environments**
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Polymeric natural organic matter (NOM) originating from plants and animals is ubiquitous in natural aquatic environments. Many water-borne pathogens, including viruses, readily associate with NOM, which has a statistical distribution of charged and hydrophobic groups. Virus-NOM association influences the transport of viruses in groundwater environments, but little is known about this interaction, or how NOM can induce new inter-virus interactions. To better understand the interaction between NOM and aqueous contaminants, we use the MS2 and Qbeta viruses (diameters $\sim$ 27nm) as surrogate water-borne pathogens. Small Angle X-ray Scattering is used to characterize the inter-particle interaction between viruses over a range of NOM concentrations and different salt types and concentrations.

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