

Polymeric Lanthanide Complexes for Phosphate Detection and Recycling

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Phosphate pollution is linked to harmful algal bloom as a result of human activities worldwide. Severe algal bloom depletes dissolved oxygen in water and suffocate marine ecosystems, leading to illness or deaths of fish and contamination of water. Herein, polymeric lanthanide complexes are proposed to probe the existence of phosphates and eventually recycle them.

Lanthanide complexes for detection of phosphate have been developed in Pierre's group. When incorporated onto chemically robust and water-swelling polymer chains, lanthanide complexes serve as not only a real-time readout for phosphates binding, but also trap phosphates and separate from polluted water. We aim to synthesise the functional material via RAFT (reversible addition-fragmentation chain transfer) polymerisation of lanthanide complexes with acrylic acids to yield water-swelling membranes and apply to water purification.