

## Phenylalanine Functionalized Naphthalenediimide Based Gelator for Marine Oil Spill Recovery

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The recent incidents of marine oil spills have prompted researchers across the globe to find possible ways of efficient and fast recovery of the oil from the ocean surface in order to contain the damage to the marine ecosystem. One of the promising ways of oil spill recovery involves the use of phase selective organogelators (PSOGs) that can selectively congeal oil from a biphasic oil-water mixture. Most of the PSOGs reported so far necessitate either (a) the use of a water-miscible carrier solvent for the introduction of the gelator, thus leaving a substantial volume of the toxic carrier solvent in the sea[1a-b], or (b) a heating or sonication step to ensure proper dispersion of the gelator[2a-e], which is again impracticable in the context of oil recovery from the ocean surface. Herein, we report a Naphthalenediimide (NDI) based amphiphilic gelator that can efficiently and instantly (within 90 s) immobilize fuel oil from an oil–water mixture. Most importantly, gelation of the oil phase can be achieved by dispersing the gelator in powdered form, at room temperature, without sonication or stirring. The minimum gelation concentrations (MGC) in oils are quite low and the gel melting temperature ( $T_{gel}$ ) at MGC are significantly higher than the ambient temperature. Scanning electron microscopy of the dried xerogel reveals a network of nanowires. Rheological analysis of the gel reveals the formation of soft solid-like gel material, with high mechanical strength. FT-IR, UV-Vis spectroscopy, powder XRD were used to understand the nature of various non-covalent interactions that are responsible for gelation.

### **References:**

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