


**Consortium for the Molecular Engineering
of Dispersant Systems**

C-MEDS Mission

- To develop fundamental science that can be translated to applications in oil spill remediation. (GOMRI Theme IV)
- Adoption of technology developments to the portfolio of industrial and spill-response practice.
- Workforce development. To provide opportunities for students to develop fruitful scientific careers, for researchers to do work of impact and relevance.
- To conduct education and outreach activities that will be of service to the community in SE Louisiana, the Gulf Coast, and to the nation.



Specific Questions addressed by C-MEDS Research

1. What are the dynamics of events at the oil-water interface upon the addition of dispersants?
2. Can modern scientific tools in spectroscopy, electron microscopy, scattering, microfluidics etc. enable a detailed understanding of molecular events at the oil-water interface?
3. Can chemical computation and molecular simulations be utilized to better understand dispersant behavior and guide new dispersant development?
4. Are there new classes of environmentally benign dispersants that could be developed based on biopolymers, biosurfactants, interfacially stabilized particles? Can the physics of naturally occurring phenomena (oil-mineral aggregates, marine snow) enable the design of dispersants?
5. Can we design new systems and methods of delivery that minimize solvent and can be tuned to varying environmental conditions?



Novel Dispersant Technologies

- **High efficiency dispersants at low concentrations (nano and micro particles, particle/surfactant systems, polymer grafted nanoparticles, polysoaps)**
- **Green and natural dispersants (low toxicity, biodegradable, nutrient loaded) polymers, particles, surfactants, fungal proteins.**
- **Dispersants that adhere and mix with oils.**
- **Herders and gelators to recover or burn oil.**
- **Imaging agents for dispersed oil (magnetic).**
- **Capsules/microgels for controlled release of dispersants.**