Seminar/Talk

Aggregation of fibers by flows: structure, mechanics and formation of Aegagropilae

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Fiber networks encompass a wide range of natural and man-made materials. The threads or fi laments from which they are formed
span a wide range of length scales; from nanometers as in biological tissues and bundles of carbon nanotubes, to millimeters as in paper
and insulation materials. The study of fi ber clustering of natural flocks could be useful for improving fabrication processes,
such as in the paper and textile industries for instance.
Here, we use the example of aegagropilae that are the remains of a seagrass (Posidonia oceanica) found on Mediterranean beaches.
First, we characterize di fferent aspects of their structure and mechanical response which make possible to draw some conclusions on their
formation process in particular by analysing the statistical distributions of size and mass of these balls. We show that these natural
aggregates are formed in open sea by random aggregation and compaction of
fibers which are held together by friction forces.
Finally, we report results from two laboratory experiments, first on the behavior of a single fiber in a turbulent von Karman flow where
we demonstrate that the conformations of flexible fibers in turbulence are analog to conformations of flexible polymers
in a solvent and then on the aggregation of fibers by a Stokes drift in a wave-induced flow.

Tuesday, March 14, 2017 01:00pm - 02:00pm
Seminar Room, Lab Building East

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