Composite Microstructures and Climate Change

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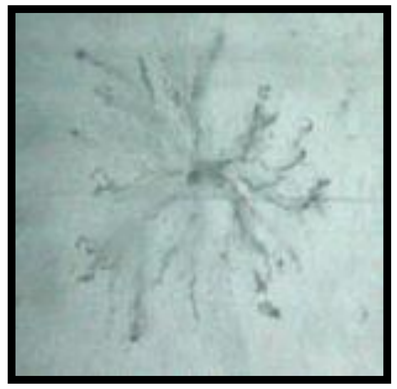
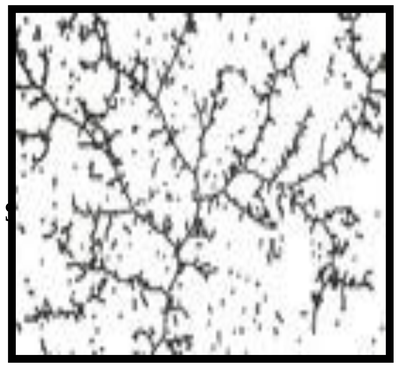
OBJECTIVES

- Develop mathematical models to better understand the changes in sea ice as it pertains to global climate
- Compare Diffusion Limited Aggregates (DLA) and Electrorheological (ER) fluids to sea ice microstructures

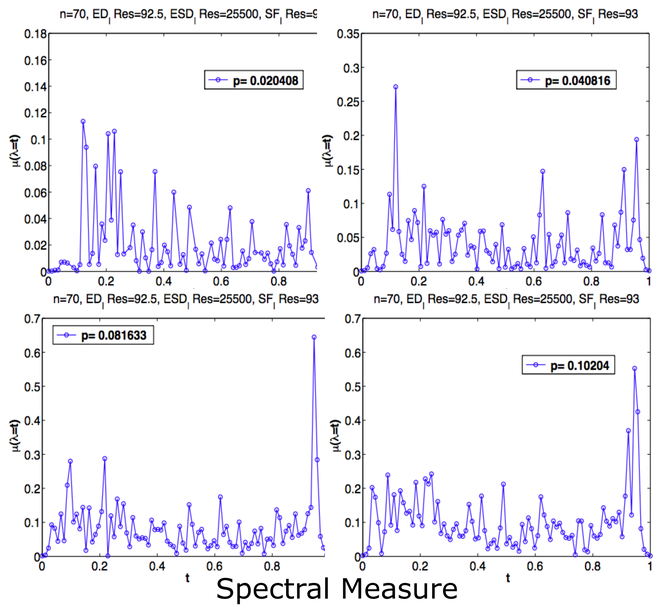
Sea ice microstructures share exciting similarities to many high tech composite structures like ER Fluids



Horizontal cross-section of sea ice



ER Fluid



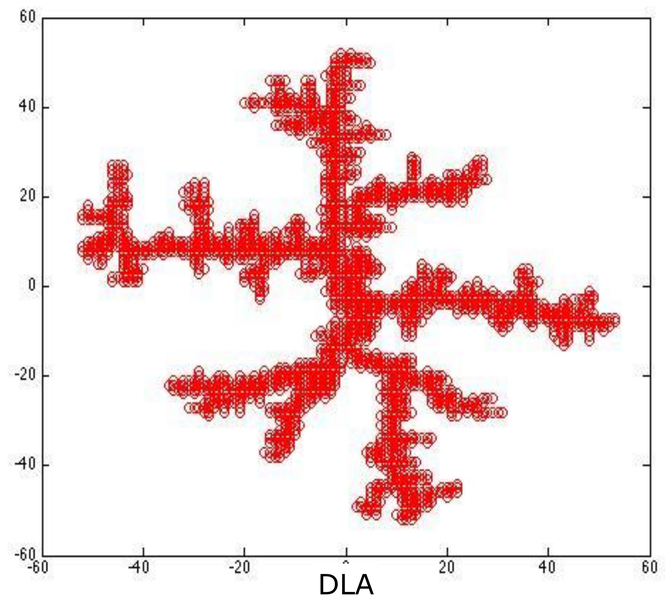
Spectral Measure

RESULTS AND FUTURE RESEARCH

- Calculation of the spectral measure for DLA structures:

$$F(s) = \int_0^1 \frac{d\mu(z)}{s - z}$$

- Simplification of complex structures
- Digitization and calculations for both ER fluids and sea ice microstructures



DLA

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