

## Microdisks from wax droplets

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This project aims to make disk-like colloids utilizing the phase transition of wax molecules to induce the shape change of spherical droplets into disks. Preliminary data in our lab showed that electric spray of wax in air with conductive additives, and lower the temperature to 4°C can transfer the wax particles into disks. So we plan to study the self assembly of these microdisks. As we increase the concentration of the disks, they shall stack into rods, and the rods shall form bundles. Since the disks are relatively uniform in size, the microdisks in the bundles should form liquid crystals. Disks are the least studied shape in colloidal science. This project will extend the frontier to enable the discotic colloidal materials investigation. This project distinguishes from the exist experiments due to the uniformity of the microdisks we fabricated. Related projects coexist in the lab include the flow behavior of microdisks in micro-channels which mimic the red-blood cells in vessels, and the shape transition of hydrocarbon droplets other than  $\alpha$ -eicosene wax.

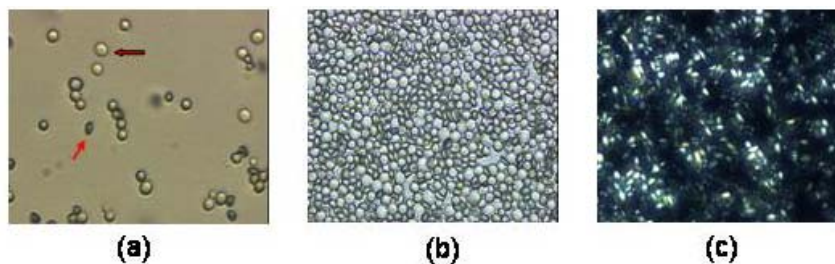


Figure1. Microdisks produced from wax droplets. (a) Dilute disk suspensions. The arrows point to disks tilting with respect to the paper. (b) Concentrated disk suspensions. (c) View of the concentrated disk suspensions through cross polarizers indicating the birefringence of the microdisks.