



Immiscible Fluids in Thin Enclosure and Shadowgraph

A thin (1.6 mm spacing) clear acrylic enclosure contains approximately equal volumes of glycerin and mineral oil, and a layer of air. Upon turning the enclosure upside down, a series of complex interactions between the three immiscible fluids are initiated. It's difficult to observe these among the clear fluids. However, by shining flash light of a smart phone through the enclosure, shadows at the fluids' interfaces are formed and projected on a white screen behind the enclosure. The shadows form because light beam is refracted due to different indices of refraction among the fluids. The clear fluids were purposefully not colored so as to rely on shadowgraphs. The screen is simply a hung, rolled out large sheet of white paper.