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Microgravity experiments on phase separation using helically-supported capillary channels MAVERICK TERRAZAS, DAVID THIESSEN, Washington State University — In microgravity environments fluid phase separation must occur without gravity. Capillarity plays a larger role in fluid transport in space, and as a passive force, it makes a great candidate for the replacement of gravity as a phase separator. This study uses helically-supported capillary channels at low-pressure for their stability over a range of pressures and ability to remove droplets from two-phase flows. Channel priming and subsequent droplet absorption by primed capillary channels is studied under normal gravity, in a drop tower (2 sec zero-g), and on a parabolic aircraft (20-25 sec zero-g). The dynamic capillary channel response to droplet impact depends on the fluidic capacitance of the channel and flow resistance to the reservoir.

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