Using Image Processing Techniques for Cluster Analysis, and Droplet Formation in Phase Separating Fluids GREGORY SMITH, ANA OPRISAN, College of Charleston, JOHN HEGSETH, University of New Orleans, SORINEL OPRISAN, College of Charleston, CAROLE LECOUTRE, YVES GARRABOS, DANIEL BEYSENS, University of Bordeaux, France, COLLEGE OF CHARLESTON TEAM, UNIVERSITY OF NEW ORLEANS COLLABORATION, UNIVERSITY OF BORDEAUX COLLABORATION — A series of experiments were performed using the Alice II apparatus in microgravity to study phase separation near critical temperature. Using image analysis techniques, we were able to obtain quantitative information regarding the morphology of gas-liquid interface near critical point of pure SF6 fluid in microgravity. Growth laws for liquid and gas clusters were extracted based on image segmentation both with thresholding and k-means clustering. By measuring the image features we analyzed the formation of spherical droplets during late stage of phase separation for a series of full view images. The growth of a wetting layer around the border of the cell containing the fluid was also investigated using image processing techniques.

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