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Evolution of precursor film in front of the moving contact line of spreading drop ANNA HOANG, PIROUZ KAVEHPOUR, Mechanical & Aerospace Engineering Department, UCLA — For wetting fluids, a microscopic film, which is known as the precursor film, exists at the front of the moving contact line. The structure of this thin film has been studied theoretically, but previous experimental investigations were limited by the resolution of the measurement system (lateral or vertical) required to capture the complete scope of this feature. We studied the evolution of the profile of a spreading droplet near the moving contact line using a total internal reflection fluorescence microscope (TIR-FM). The features of the macroscopic drop (spherical cap), wedge region, and precursor film were investigated within a single experiment. This was made possible by the lateral resolution and dynamic range of our technique. The dynamic characteristics of the precursor films have a good agreement with the available theoretical results.

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