

## The Effect of Air Bubbles on Liquid Transfer During Printing

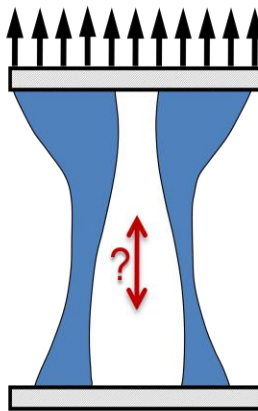
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The transfer of liquid from one surface to another is a key stage in industrial printing processes. A potential complication is the entrapment of air bubbles, which can alter the amount of liquid transferred to the substrate, and can produce defects if the bubbles do not burst before drying. To better understand this effect, we use flow visualization to study the stretching of liquid bridges with bubbles at low capillary numbers. The dynamics of the outer gas-liquid interface, between the drop and the surrounding air, are found to be the same during stretching both with and without a bubble; thus, the volume of fluid (liquid or liquid plus bubble) transferred to the moving surface is the same in both cases, regardless of the dynamics of the bubble. Therefore, by controlling which surface the bubble rests on after breakup, the amount of liquid transferred can be significantly improved.



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