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Effect of fluid properties and impact speed for ophthalmic drug delivery via droplet impact IDERA LAWAL, Texas Tech University, PEDRO MALLET, Universidade Federal Fluminense, JEREMY MARSTON, Texas Tech University — Front-of-the-eye (FOTE) delivery is the most popular route for administering drugs to the eye (i.e. ophthalmic delivery), with dropper bottles constituting a vast majority of the current market. These are notoriously inefficient and dictate the need for innovative devices to deliver discrete volumes to the eyeball. In addition, to promote adhesion many novel formulations incorporate polymers, leading to complex fluid properties. However, the fluid dynamics of this process and the specific role of fluid rheology combined with the pre-existing tear film are not well understood. Here, we will present preliminary results on delivery of polymeric solution using droplets, and discuss the effect of rheology, impact speed, substrate curvature, and evaluate universal scaling laws to capture the dynamics.

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