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Viscous dipping, application to the capture of fluids in living organisms AMANDINE LECHANTRE, DENIS MICHEZ, PASCAL DAMMAN, Univ de Mons — Some insects, birds and mammals use flower nectar as their energy resources. For this purpose, they developed specific skills to ingest viscous fluids. Depending on the sugar content, *i.e.*, the viscosity, different strategies are observed *in vivo*. Indeed, butterflies use simple suction for low viscosity nectars; hummingbirds have a tongue made from two thin flexible sheets that bend to form a tube when immersed in a fluid; other animals exhibit in contrast complex papillary structures. We focus on this last method generally used for very viscous nectars. More specifically, bees and bats possess a tongue decorated with microstructures that, according to biologists, would be optimized for fluid capture by viscous dipping. In this talk, we will discuss this assumption by comparing physical models of viscous dipping to *in vivo* measurements. To mimic the tongue morphology, we used various rod shapes obtained by 3D printing. The influence of the type and size of lateral microstructures was then investigated and used to build a global framework describing viscous dipping for structured rods/tongues.

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