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From wetting to wear: visualization of contact zone in beverage tribology

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Matching the mouthfeel of sugar is still one of the largest unsolved challenges of product developers, as sugar not only provides sweetness, but also mouthfeel. Mouthfeel is one of the most critical product attributes driving consumer choice and acceptability of reduced sugar beverages. In order to link mouthfeel attributes to analytical measures, one must first of all appreciate that drinking is a highly dynamic process that involves mixing of the ingested beverage with saliva and the resulting bolus being sheared over several length scales between the tongue and the upper palate. In order to better interpret saliva driven changes to beverage boli, it is important to recognize the conversion of the beverage from a simple Newtonian fluid to a multiphase complex fluid. Currently, our ability to properly interpret tribology data from multiphase complex fluids is rather limited, as we lack additional information on structure (atomic, molecular, macromolecular) in the contact zone. Therefore developing techniques that will allow us to measure structural changes governed by saliva beverage interactions will lead to better insights to enable the rational design of reduced sugar beverages.

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