**Success and failure in mayonnaise preparation in the kitchen [1]**

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The combination of near-infrared spectroscopic techniques (HSI or hyperspectral imaging) with advanced image analysis allows noninvasive, quantitative analysis of slow mixing phenomena. This is illustrated in a small study to monitor the preparation of homemade mayonnaise, specifically concerning the major challenge of “breaking” the emulsion. The context of the phenomenon in terms of the physics of mixing is explained as well.

This study demonstrates that the Kullback–Leibler divergence metric, when applied to HSI data, enables quantitative tracking of emulsion mixing dynamics and can be used to quantify emulsion homogeneity and identify phase inversion during mayonnaise preparation if manual oil addition proceeds too quickly. This approach holds promise for real-time monitoring of emulsion quality in industrial settings where the state of the emulsion cannot always be determined visually.

[1] M. Ghaffari *et al, Physics of Fluids* 36, 124123 (2024)