

Abstract Submitted
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**Maximum bubble pressure
tensiometry and foamability** THEODORE WALKER, WILLIAM ABBOTT-
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gineering, University of Illinois Chicago — The stability of a freshly created foam
is intimately linked with the rate of mass transfer of a surfactant from liquid sub-
phase to the interface, and this diffusion- or adsorption-limited kinetics is said to
impact the so-called foamability. The time dependent variation in surface tension
can also become a factor in controlling response to dilatational deformations, as ki-
netic effects due to mass transfer also enter into the description of Gibbs-Marangoni
elasticity of surfaces. Dynamic surface tension measurements carried out with con-
ventional methods like pendant drop analysis, Wilhelmy plate, etc are limited in
their temporal resolution (>50 ms). In this study, we describe design and appli-
cation of maximum bubble pressure tensiometry for the measurement of dynamic
surface tension effects at extremely short (1-50 ms) timescales. We discuss the ram-
ifications of this nearly unprecedented capability for unraveling physics underlying
high speed printing and foaming with small molecule surfactant solutions.

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