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## Surface Tensions of Jatropha and Soapnut Biodiesel and their Blends with Diesel at Elevated Temperatures and Pressures

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### Abstract

*Biodiesel is a renewable fuel derived from vegetable oils, animal fats, waste cooking oil and other lipids. Biodiesel can be used in its pure form as a blend with petroleum diesel in diesel engines with little or no modification. It can be produced domestically reducing the need to import petroleum products. As current biodiesel feedstocks are mostly derived from edible oils and fats, it is likely that biodiesel will compete with food sources. This research is focused on the characterization of the biodiesel sources such as jatropha and soapnut which are non-edible in nature. A high pressure pendant drop equipment (PD-E 1700) and drop shape analysis (DSA 100 V1.9) were used to measure the equilibrium surface tension of diesel and biodiesel fuels at elevated temperatures and pressures. The surface tension of diesel and biodiesel fuels showed a linear relationship with temperatures and pressures. A regression model was also developed using the measured data from the tests.*

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