

**PACKAGE ID** - 000429IPCAT00 MEOR4D

**KWIC TITLE** - Measurement of Interfacial Tension By Use of  
Pendant Drop Video Techniques

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**LIMITATION CODE** - UNL                    **AUDIENCE CODE** - UNL

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**DESCRIPTION** - An instrument and associated software to measure the interfacial tension (IFT) of aqueous surfactant solutions and crude oil. The method involves injection of a drop of fluid (such as crude oil) into a second immiscible phase to determine the IFT between the two phases. The instrument is composed of an AT-class computer, optical cell, illumination, video camera and lens, video frame digitizer board, monitor, and software. The camera displays an image of the pendant drop on the monitor, which is then processed by the frame digitizer board and non-proprietary software to determine the IFT. Several binary and ternary phase systems were taken from the literature and used to measure the precision and accuracy of the instrument in determining IFTs.

**PACKAGE CONTENTS** - Media Directory; Software Abstract; Topical Report; Media Includes Source Codes, Compilation Instructions, Linking Instructions;

**SOURCE CODE INCLUDED?** - Yes

**MEDIA QUANTITY** - 1 3.5 diskette

**METHOD OF SOLUTION** - The analysis uses an empirical procedure that defines a function, S (drop shape factor), to determine the drop shape. The maximum diameter of the drop is determined and then used in the determination of the horizontal dimension of the drop. The ratio of these two measurements is equal to the drop shape factor.

**COMPUTER** - IBM PC/AT

**OPERATING SYSTEMS** - DOS

**PROGRAMMING LANGUAGES** - C

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**SOFTWARE LIMITATIONS** - The accuracy and precision of the technique and apparatus presented is very good for measurement of IFTs in the range from 72 to 10 to the -2 mN/m, which is adequate for many enhanced oil recovery applications.

**SOURCE CODE AVAILABLE (Y/N)** - Y

**UNIQUE FEATURES** - With modifications to the equipment and the numerical techniques, measurements of ultralow IFTs (less than 10 to the -3rd power mN/m) should be possible as well as measurements at reservoir temperature and pressure conditions.

**HARDWARE REQS** - The complete IFT system consists of the following major components: optical cell, illumination, video camera and lens, computer, video frame digitizer board, monitor, and software. The hardware system provides a video image of a pendant drop suspended in another liquid, while the software analyzes the drop shape to calculate the IFT between the two liquids. This software is intended to run on an IBM PC AT-class computer with a video frame digitizer board that interfaces to a video camera and video display.

**REFERENCES** - Melvin D. Herd, Charles P. Thomas, Gregory A. Bala, and Gordon D. Lassahn, Measurement of Interfacial Tension By Use of Pendant Drop Video Techniques, June 1992.

**ABSTRACT STATUS** - Submitted June 1992.

**SUBJECT CLASS CODE** - QR

**KEYWORDS** -

COMPUTER PROGRAM DOCUMENTATION  
M CODES  
SURFACE TENSION  
OILS  
CAMERAS

**EDB SUBJECT CATEGORIES** -  
990200 023000

**SPONSOR** - DOE/FE

**PACKAGE TYPE** - AS - IS