

**FOAMING OF AN ANIONIC SURFACTANT IN THE PRESENCE
OF CALCIUM SOAP PRECIPITATE**

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A Thesis Submitted in Partial Fulfilment of the Requirements
for the Degree of Master of Science
The Petroleum and Petrochemical College, Chulalongkorn University
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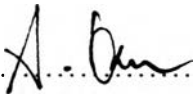
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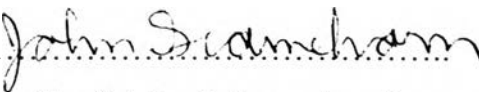
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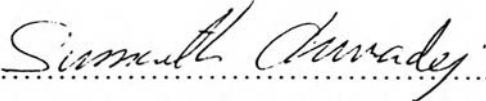
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ABSTRACT

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Mr. Panus Srikajorn: Foaming of an Anionic Surfactant in the Presence of Calcium Soap Precipitate. Thesis Advisors: Prof. John F. Scamehorn and Dr. Nantaya Yanumet 54pp ISBN 974-334-143-9

Foaming properties of an anionic surfactant in the presence of calcium soap precipitate (Ca-SO) below and above the CMC were studied. The systems contained calcium salt of saturated fatty acid ($\text{Ca}(\text{C}_n\text{H}_{2n-1}\text{O}_2)_2$) where $n = 8, 12, 14$ and 18 , and sodium dodecyl sulfate (SDS). The effect of Ca-SO on the foamability of SDS and the contact angle of SDS solutions on the precipitate surface were determined. Foamability of SDS solutions with Ca-SO was found to decrease dramatically in the region below the CMC, but it was not affected by the presence of Ca-SO at the concentration above CMC. Ca-SO with longer alkyl chain was found to have greater antifoam ability than the shorter chain. This result was in agreement with the results on contact angle of SDS solutions on Ca-SO which showed that the contact angle increased when the chainlength of Ca-SO increased. The results also confirmed that Ca-SO precipitate reduced the foamability of SDS solutions by the dewetting mechanism.

บทคัดย่อ

นายพนัส ศรีขจร: การเกิดฟองของสารลดแรงตึงผิวที่มีเกลือแคลเซียมของกรดไขมัน (Foaming of An Anionic Surfactant in The Presence of Calcium Soap precipitate)
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ในงานวิจัยนี้ ได้มีการศึกษาสมบัติของฟองสารลดแรงตึงผิวประจุลบที่มีตะกอนเกลือแคลเซียมของกรดไขมันอิ่มตัว ที่ความเข้มข้นสูงและต่ำกว่าซีเอ็มซี โดยในระบบประกอบด้วยโซเดียมโดเดซิลซัลเฟตกับเกลือแคลเซียมของกรดไขมันอิ่มตัว $(Ca(C_nH_{2n-1})O_2)_2$ ที่มี $n = 8, 12, 14$ และ 18 ตามลำดับ นอกจากนี้ ยังได้ศึกษาผลของมูมส์ผสมของสารละลายโซเดียมโดเดซิลซัลเฟตบนพื้นผิวของเกลือแคลเซียมของกรดไขมัน จากการทดลองพบว่าการเกิดฟองของโซเดียมโดเดซิลซัลเฟตลดลงที่ความเข้มข้นต่ำกว่าซีเอ็มซี แต่ไม่ลดลงเมื่อความเข้มข้นสูงกว่าซีเอ็มซี นอกจากนี้ ยังพบว่าความสามารถในการลดฟองของเกลือแคลเซียมของกรดไขมันเพิ่มขึ้นตามความยาวของหมู่แอลคิล ผลการทดลองที่ได้สอดคล้องกับการวัดมูมส์ผสมของสารละลายโซเดียมโดเดซิลซัลเฟตบนพื้นผิวของเกลือแคลเซียมของกรดไขมัน โดยพบว่ามูมส์ผสมเพิ่มขึ้นเมื่อความยาวของหมู่แอลคิลในกรดไขมันเพิ่มขึ้น ผลการทดลองยังเป็นการยืนยันว่าตะกอนเกลือแคลเซียมของกรดไขมันอิ่มตัว สามารถลดฟองของสารละลายโซเดียมโดเดซิลซัลเฟต โดยกระบวนการดีเวทติ้ง

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