

**EFFECT OF pH ON ADSOLUBILIZATION OF TOLUENE AND
ACETOPHENONE INTO ADSORBED SURFACTANT ON
PRECIPITATED SILICA**

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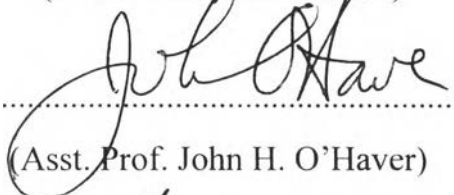
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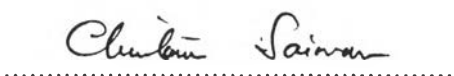
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ABSTRACT

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Torsakul Pradubmook: Effect pH on Adsolubilization of Toluene and Acetophenone into Adsorbed Surfactant on Precipitated Silica.

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In this research, we studied the effect of pH on adsorption of a cationic surfactant, cetyltrimethylammonium bromide (CTAB), on precipitated silica and adsolubilization of toluene and acetophenone in CTAB at various pH values. Both single-solute and mixed-solute systems were investigated using batch liquid adsorption at pH 5 and 8. The results from the adsorption of CTAB revealed that increasing the pH led to higher amounts of surfactant adsorbed on the precipitated silica. In single solute system, the adsolubilization of both solutes increased with increasing equilibrium concentration of the solute in aqueous phase. For toluene, pH seemed to have little effect on the adsolubilization. In contrast, the pH effect was more pronounced in the case of acetophenone as indicated by significant increase in the acetophenone adsolubilization when pH was increased from 5 to 8. In mixed solute system, the presence of acetophenone had insignificant effect on toluene adsolubilization whereas the presence of toluene had synergistic effect on acetophenone adsolubilization. Moreover, the analyses through the use of the adsolubilization equilibrium constant (K) suggested that toluene adsolubilized into both the palisade layer and core of admicelle while acetophenone adsolubilized into palisade layer only.

บทคัดย่อ

ต่อสกุล ประดับมูข : ผลกระทบของความเป็นกรด-ด่างต่อการแอดโซลูบิไลเซชันของ ทูโลอินและอะซิโตฟีโนนในสารลดแรงตึงผิวที่ดูดซับอยู่บนซิลิกา (Effect of pH on Adsolubilization of Toluene and Acetophenone into Adsorbed Surfactant on Precipitated Silica) อ. ที่ปรึกษา : ศ.เจฟฟรี เฮช ฮาร์เวล, ผศ. ดร. จอห์น เฮช โอ เฮเวอร์ และ ดร. ปมทอง มาลากุล ณ. อยู่ทยา 52 หน้า ISBN 974-13-0703-9

งานวิจัยเล่มนี้ได้ศึกษาผลกระทบความเป็นกรด-ด่าง (พีเอช) ที่มีต่อการดูดซับของเซติล ไตรเมทิลแอมโมเนียมโบรไมด์ บนซิลิกาและการแอดโซลูบิไลเซชันของทูโลอินและอะซิโตฟีโนนในเซติล ไตรเมทิลแอมโมเนียมโบรไมด์ที่สภาวะต่างๆ ของกรดและด่าง ผู้วิจัยได้ทดลองการแอดโซลูบิไลเซชันของระบบสารละลายชนิดเดี่ยวและสารละลายชนิดผสมที่ พีเอช 5 และ 8 ผลการทดลองสรุปได้ว่าเมื่อพีเอชสูงขึ้นทำให้การดูดซับของเซติล ไตรเมทิลแอมโมเนียมโบรไมด์บนซิลิกามากขึ้นด้วย

ผลของระบบสารละลายชนิดเดี่ยวพบว่าการแอดโซลูบิไลเซชันของสารละลายเพิ่มขึ้นเมื่อความเข้มข้นสมมูลของสารละลายในระบบเพิ่มขึ้น ค่าของพีเอชมีผลต่อการแอดโซลูบิไลเซชันของทูโลอินน้อยมาก ในทางตรงกันข้ามที่ผลต่อการแอดโซลูบิไลเซชันของอะซิโตฟีโนน โดยแอดโซลูบิไลเซชันของอะซิโตฟีโนนเพิ่มขึ้นเมื่อพีเอชสูงขึ้น ส่วนผลของสารละลายชนิดผสม อะซิโตฟีโนนมีผลต่อการแอดโซลูบิไลเซชันของทูโลอินน้อยมาก ส่วนทูโลอินมีผลสนับสนุนต่อการแอดโซลูบิไลเซชันของอะซิโตฟีโนน นอกจากนี้การคำนวณค่าคงที่ของการแอดโซลูบิไลเซชันของสารได้บ่งบอกถึงทูโลอินเกิดแอดโซลูบิไลซ์ที่ชั้นพาลีสเตดและแกนกลางของแอดไมเซลล์ ส่วนผสม อะซิโตฟีโนนเกิดแอดโซลูบิไลซ์ที่ชั้นพาลีสเตดเท่านั้น

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