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Evaporation of microemulsion with esters / Ong Bee Ling.

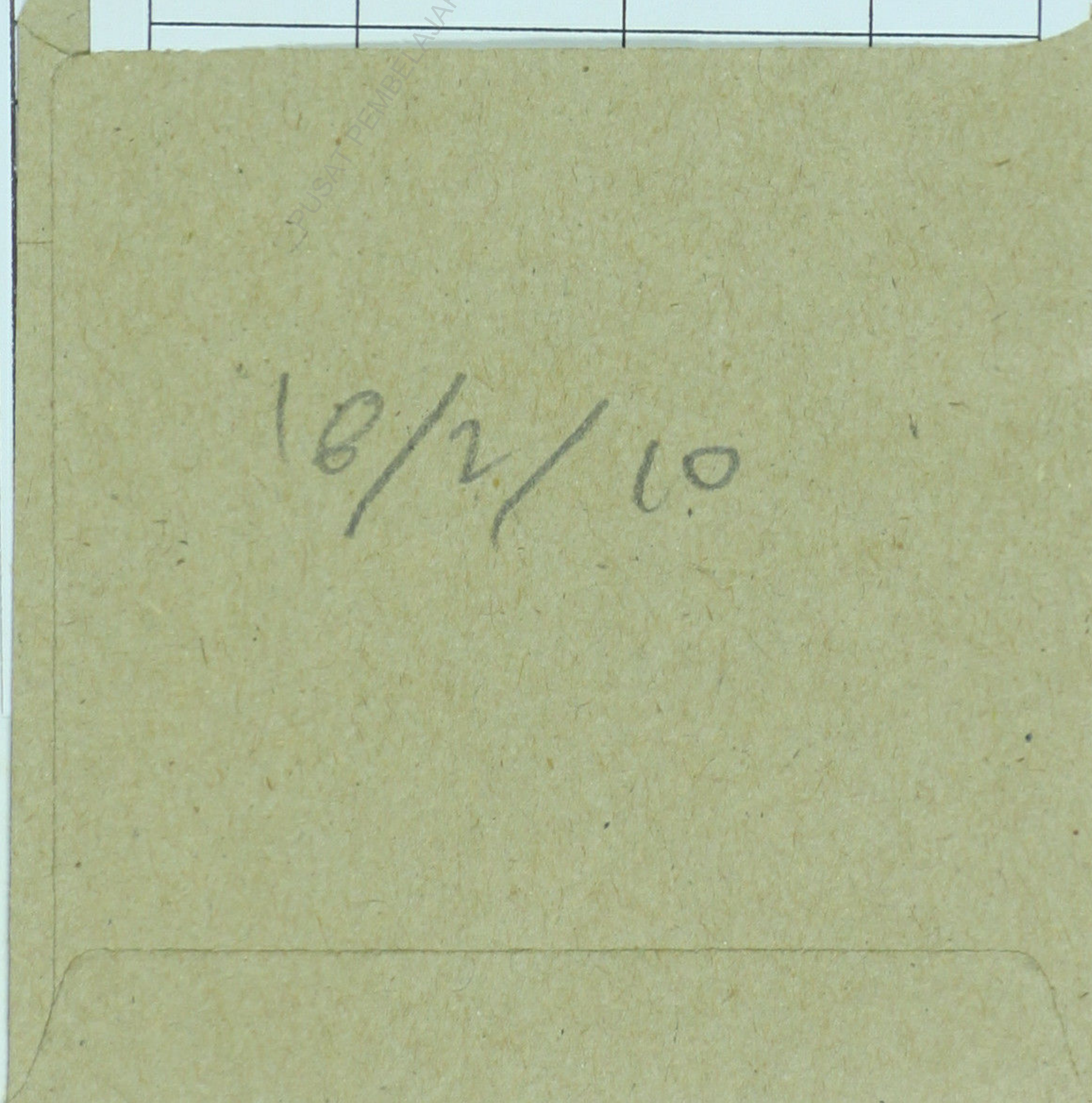


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Pengarang ONG BEE LING		No. Panggilan C/N 1302	
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EVAPORATION OF MICROEMULSION WITH ESTERS

By

ONG BEE LING

**Thesis submitted in partial fulfillment of the requirement for the Degree
of Bachelor Science (Hons.) Chemistry**

**FACULTY OF SCIENCE AND TECHNOLOGY
COLLEGE UNIVERSITY SCIENCE AND TECHNOLOGY MALAYSIA
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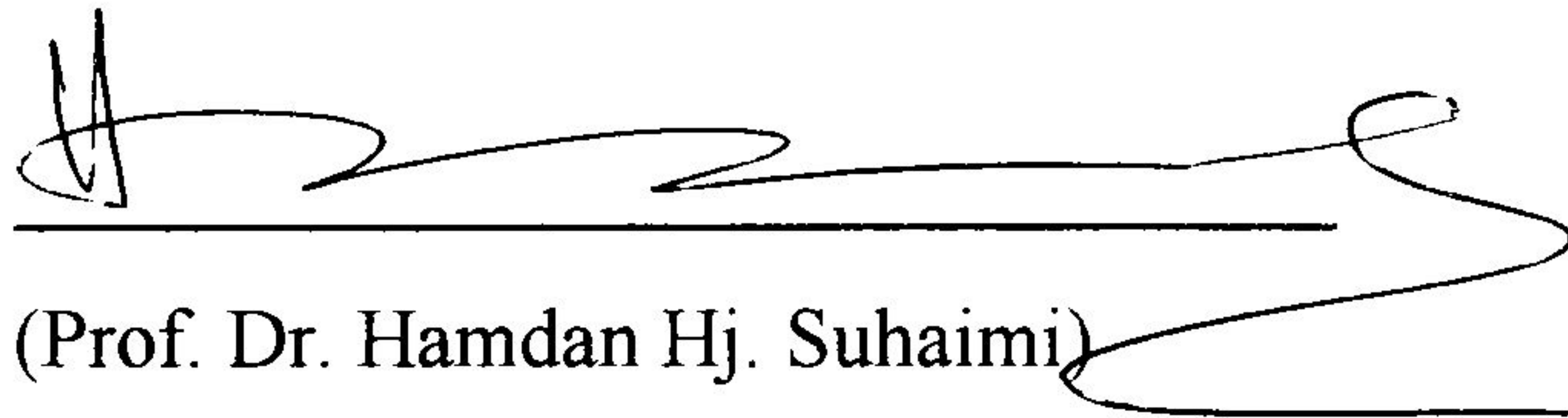
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Approved By:

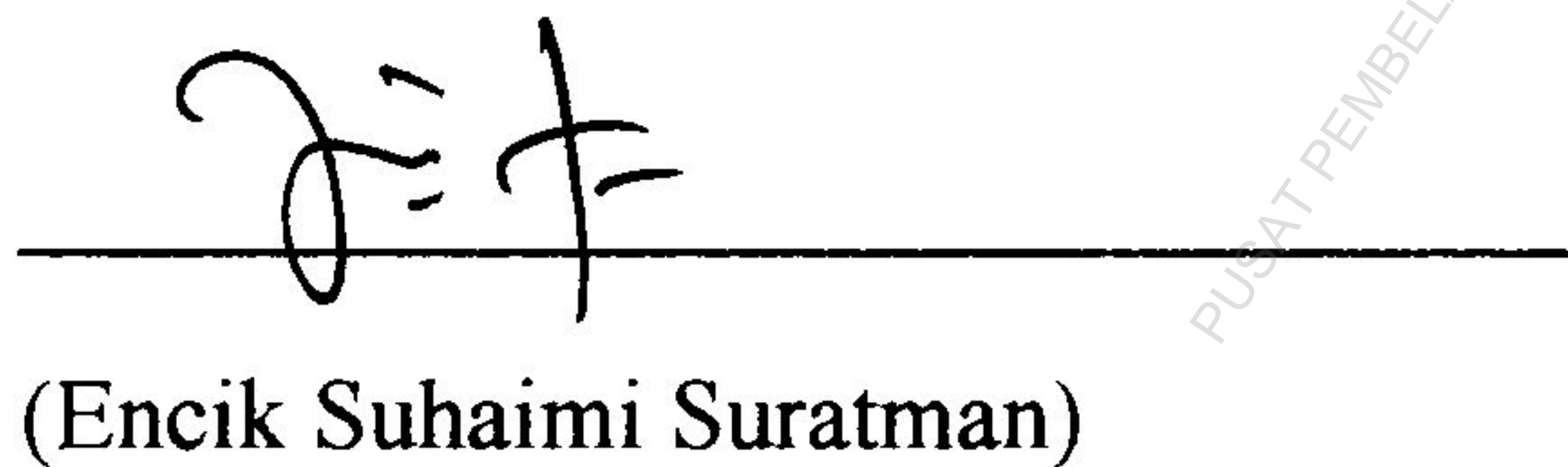
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Date: 21/6/02

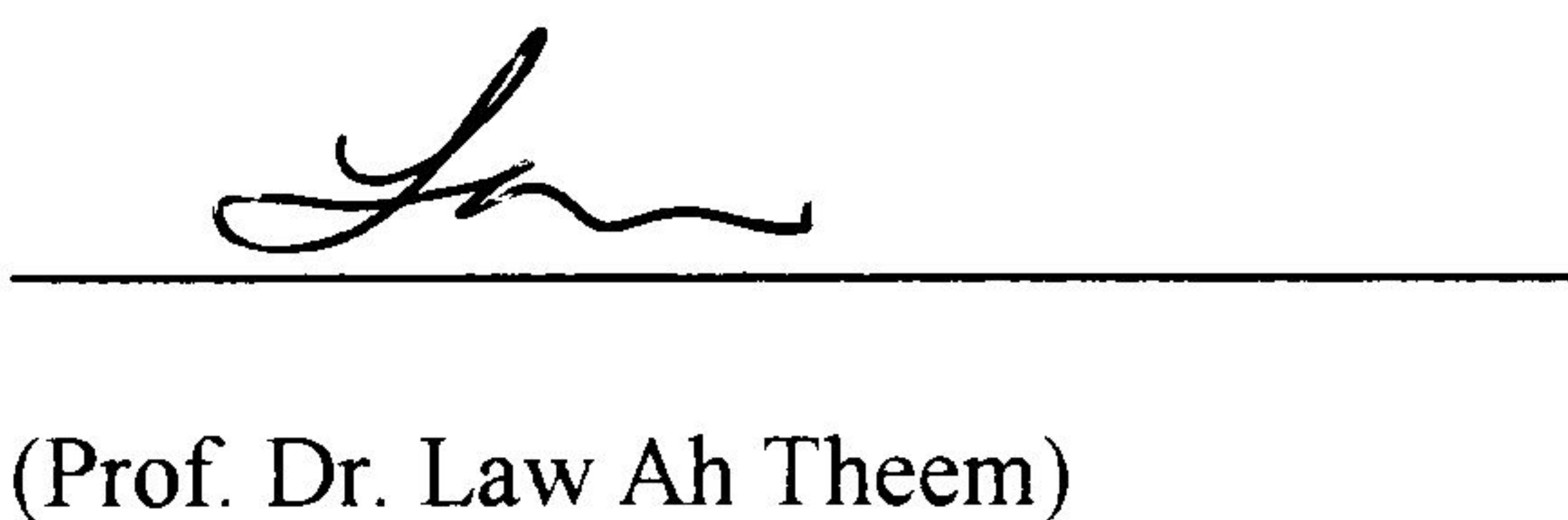
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Date: 21/4/02

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ABSTRAK

Kajian terhadap sifat gambarajah fasa telah dilakukan ke atas sistem air / surfaktan / ester dan gliserol / surfaktan / ester untuk penyediaan mikroemulsi pada suhu dan kelembapan persekitaran. Agen emulsi yang digunakan dalam projek ini ialah triethanolamine dan 1-pentanol dengan nisbah berat 25 : 75 manakala ester yang digunakan pula ialah isoamyl acetate dan isoamyl butyrate. Kawasan mikroemulsi telah diperhatikan dalam kedua-dua sistem. Akan tetapi, kawasan mikroemulsi yang kecil sahaja didapati tanpa menggunakan ko-surfaktan (1-pentanol). Ko-surfaktan digunakan untuk menstabilkan triethanolamine supaya kawasan mikroemulsi menjadi lebih besar setelah co-surfaktan ditambahkan. Daripada pemerhatian yang didapati, kawasan mikroemulsi bagi sistem gliserol lebih stabil daripada sistem akues. Ester isoamyl acetate juga membentuk kawasan mikroemulsi yang lebih besar daripada ester isoamyl butyrate.

Kehilangan berat daripada pemeruapan dalam sistem mikroemulsi adalah lebih tinggi di ester isoamyl acetate dalam sistem akues. Kehilangan berat dan kadar pemeruapan bergantung kepada nisbah bahan surfaktan, ester dan kandungan pelarut. Kandungan ester dan kandungan pelarut yang tinggi menyebabkan kadar pemeruapan yang lebih tinggi. Bagi sistem yang bukan akues, kadar pemeruapan dan kehilangan berat menurun dengan kandungan gliserol.

ABSTRACT

The phase behaviour of aqueous (water / surfactant / esters) and non-aqueous (glycerol / surfactant / esters) systems were investigated to prepare microemulsions at ambient humidity and room temperature. Triethanolamine and 1-pentanol with the ratio 25 : 75 were used as emulsifier. While the ester were isoamyl acetate and isoamyl butyrate. Microemulsion regions were observed in both systems, however a smaller region was observed without a co-surfactant (1-pentanol). Co-surfactant was added to stabilize the triethanolamine in order to form a larger microemulsion region and a larger region resulted after adding the co-surfactant. The solubility region of non-aqueous system was larger than aqueous system. In addition, the microemulsion with isoamyl acetate was larger than the isoamyl butyrate counterpart.

The weight loss turning evaporation was found to be larger in the aqueous system with isoamyl acetate in the ester component. The weight loss and evaporation rate were found to be dependent on the weight ratio of esters, triethanolamine, 1-pentanol, water and glycerol content. A higher weight ratio and water content led to higher evaporation. In addition, lower surfactant content led to a higher evaporation. In the non-aqueous system, the evaporation rate decreased with the esters content.