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C/N 1268

LP 24 FST 4 2002



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Emulsion from oil plam based surfactant / Mazliena Husain.



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(KUSTEM) C/N 1268

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| Pengarang MAZLIENA HUSSAIN | No. Panggilan LP 24 FST |
| Judul Emulsion oil palm based surfactant | |
| Tarikh 15/12/02 | Waktu Pemulangan 4.15 PM |
| Nombor Ahli uk 5438 | Tanda tangan h |

LP
51
FST
10
2002

18/2/10

HAK MILIK
PERPUSTAKAAN KUSTEM

EMULSION FROM OIL PALM BASED SURFACTANT

MAZLIENA BT HUSAIN

**FACULTY OF SCIENCE AND TECHNOLOGY
KOLEJ UNIVERSITI SAINS DAN TEKNOLOGI MALAYSIA
UNIVERSITI PUTRA MALAYSIA**

2002

1100024689

EMULSION FROM OIL PALM BASED SURFACTANT

By

MAZLIENA BT HUSAIN

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

**FACULTY OF SCIENCE AND TECHNOLOGY
KOLEJ UNIVERSITI SAINS DAN TEKNOLOGI MALAYSIA
UNIVERSITI PUTRA MALAYSIA**

2002

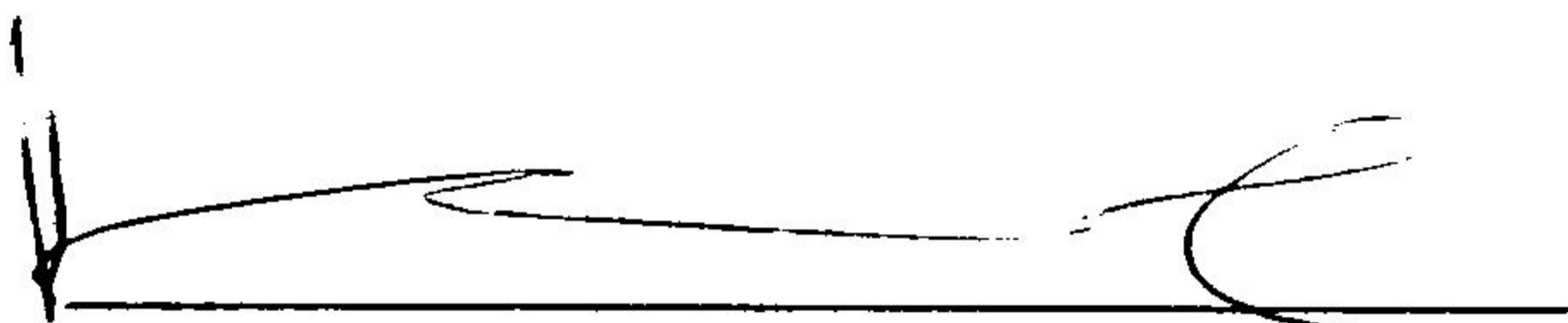
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MAZLIENA BT HUSAIN

Approve by:

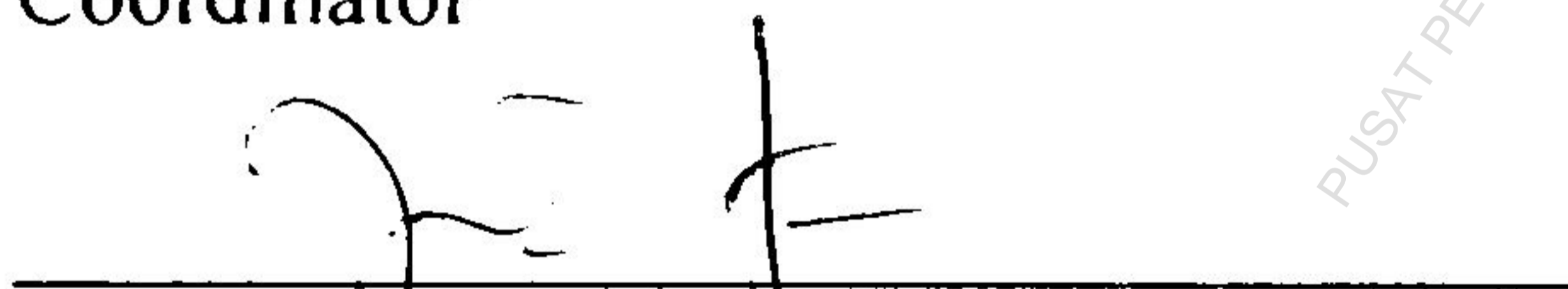
Supervisor



(Prof. Dr. Hamdan Suhaimi)

Date: _____

Coordinator



(Encik Suhaimi Suratman)

Date: 23/7/02

Acting Head of Chemistry



(Prof. Dr. Law Ah Theem)

Date: 10/7/02

PUSAT PEMBELAJARAN DIGITAL SULTANAH NUR ZAHIRAH

ACKNOWLEDGMENT

Assalamualaikum, first of all I am grateful to Allah s.w.t. for giving me the strength to finish my final year project.

Secondly, I would like to say thank you to my supervisor Prof. Hamdan Suhaimi for his commitment, advise, and guidance in this project.

Thank you also for all whom had given help and support to me during this project, and especially for my dear friend, Normas Idayu and Mazlin Haryati. Not to forget also to my roommate Idayu and Noor Aimi Aidora

Last but not least, special gratitude to both of parents and family for their support. Not forgetting also to my loving husband, Norhisam for the help, support, commitment, and consideration rendered during I run my project.

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PUSAT PEMBELAJARAN DIGITAL SULTANAH NUR ZAHIRAH

LIST OF SYMBOL

| | |
|------------------|---|
| AOTC | “Makmal Efikasi Pusat Teknologi Lanjutan Oleokimia” |
| CMC | Critical Micelle Concentration |
| HLB | Hydrophile-Lipophile Balance |
| H ₂ O | Water |
| MPOB | Malaysia Palm Oil Berhad |
| nSOW | Nonionic –surfactant-Oil in Water System |
| O/W | Oil- in-water |
| W/O | Water-in Oil |
| PIT | Phase Inversion Temperature |
| UV | Ultra violet |
| V _f | Volume of Oil/water Separate |
| V _o | Initial Volume of Emulsion in a Graduated Cylinder |
| W/Co-S | Water/Co-Surfactant |
| W/S | Water/Surfact |

ABSTRACT

The study in this project is the production of lotion from oil palm based surfactant. For that, the product that derived from oil palm was used, such as TEA as the surfactant and cetyl alcohol such as the co-surfactant. As known in general, the cosmetic product based from plants, especially from oil palm has more advantage compared with the product based on mineral oil/petroleum. Cetyl alcohol is not only derived from oil palm, but also serves as emollient for the skin. In addition, cetyl alcohol also has a function as concentrating agent to concentrate the mix of emulsion. The use of cetyl alcohol in cosmetic product also causes the product to be it nontoxic and less irritant to skin.

In this study, a phase diagram was constructed to determine an emulsion area where surfactant and co-surfactant was titrated with water as a medium of solvent. From the observation, the three phase region was found at the area of 38% by weight surfactant and 19% by weight co-surfactant. To prepare the sample of emulsion, five points were chosen, i.e.: 6 %, 8 %, 12 %, 16 % and 24 % by weight of cetyl alcohol at the weight ratio of oil phase/water phase 20/80 and 40/60. In the emulsion process, phase inversion method was used. The raw material for the oil phase was cetyl alcohol while for water phase, TEA and demineralized water, and carbopol be an action as concentrating agent in formulation were used. After the emulsion process, the emulsion resulting was kept at room temperature. The stability was determined by measuring the percentage volume of oil phase/ water phase in the measure cylinder. Optical microscopic was used to observe

the droplet size of emulsion. The appearance of liquid crystalline phase was observed from the polarizing microscopy. The existence of liquid crystalline showed that the emulsion is stable.

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ABSTRAK

Kajian yang dibuat dalam projek ini ialah penghasilan losen berasaskan minyak kelapa sawit. Oleh itu produk yang diterbitkan daripada minyak kelapa sawit telah digunakan, seperti TEA sebagai surfaktan dan setil alcohol sebagai ko-Surfaktan. Sebagaimana yang telah diketahui umum, bahan kosmetik yang berasaskan tumbuhan terutamanya kelapa sawit mempunyai lebih banyak kebaikan jika dibandingkan dengan produk yang berasaskan "Mineral Oil"/ Petroleum. Penggunaan setil alcohol bukanlah kerana ia terbitan daripada kelapa sawit, tetapi ia juga turut berfungsi sebagai agen pelicin dan pelembut kepada kulit. Selain itu ia juga turut berperanan sebagai agen pelikat untuk melikatkan campuran emulsi. Penggunaan setil alcohol dalam produk kosmetik juga disebabkan ia tidak menyebabkan toksik dan radang kepada kulit.

Dalam kajian ini beberapa gambarajah fasa telah dibina untuk menentukan kawasan emulsi dimana surfaktan dan ko-surfaktan telah dititratkan dengan air suling yang bertindak sebagai bahantara pelarut. Daripada pemerhatian didapati wujud kawasan tiga fasa pada kawasan 38% surfaktan dan 19% ko-surfaktan. Untuk menyediakan sampel emulsi 5 titik telah dipilih, iaitu 6%, 8%, 12%, 16%, 24% cetil alcohol pada nisbah minyak air 20:80 dan 40:60. Dalam pembentukan emulsi kaedah pembalikan fasa digunakan. Bahan mentah untuk fasa minyak ialah cetil alcohol, untuk fasa air ialah TEA dan air suling, manakala carbopol digunakan sebagai pemekat di dalam formulasi. Selepas proses pengemulsi, emulsi disimpan pada suhu bilik, Kestabilan kemudian ditentukan dengan mengukur peratusan isipadu fasa pemisahan minyak/air dalam silinder

penyukat. Saiz titisan pula ditentukan dengan menggunakan mikroskop optik. Dengan menggunakan kaedah pengutuban cahaya kehadiran hablur cecair dapat diperhatikan. Kehadiran hablur cecair ini menunjukkan keadaan emulsi yang terhasil adalah sangat stabil.

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