

SYNTHESIS, CHARACTERIZATION AND STUDY OF SURFACTANTS EFFICIENCY IN THE DISPERSION (O/W) EMULSIONS

Muhammed Jawad Kadhim Al-Assadi, Kaukab Ali Hussein Al-Ali

Department of Chemistry, College of Education, University of Basrah. Basrah-Iraq

Abstract

In the present study three classes of surfactants derivatives from benzilic acid were prepared. The prepared surfactants were characterized by FTIR-Infrared spectrophotometer and CHN analysis. The physical properties of the prepared surfactants were measured i.e. (pH, density, viscosity, color, freezing point and stability to hydrolysis). The efficiency of the prepared surfactants was studied with time and long side chain substituted. The hydrophilic-lipophilic balance (HLB) was calculated.

الخلاصة

تم تحضير ثلاث أنواع من المواد المنشطة للسطوح المشتقة من حامض البنزيليك والمستخدم في تشتيت مستحلبات النفط في الماء (O/W). شخّصت المواد المحضرة خلال الدراسة الحالية باستخدام مطيافية الأشعة تحت الحمراء والتحليل العنصر الدقيق (CHN)، كما تم قياس الخصائص الفيزيائية للمواد المحضرة والمتمثلة بـ (الدالة الحامضية، الكثافة، اللزوجة، اللون، درجة الانجماد والاستقرارية تجاه التحلل بعد إضافتها إلى المستحلب النفطي) فضلاً عن دراسة فعاليتها تجاه تشتيت البقع النفطية مع الزمن وتأثير طول السلسلة الأليفاتية المعوضة على كفاءة التشتيت. كما تم حساب قيمة الموازنة بين المجاميع المحبة للماء والمحبة للدهون (HLB) باستخدام المعادلة (1).

Introduction

The common aromatic nuclei; benzene and naphthalene are not sufficiently hydrophobic to produce a high degree of field when they are combined with a sulphonic acid group. When however the aromatic uncles is substituted with one or more alkyl groups, which may be quite small, the amphipathic character of the molecules is greatly enhanced and in this class we fined may important surface-active agents [1a, 1 b].

The alkyl benzene sulphonates however are efficient detergents whene the alkyl group contains 10-14 carbon atoms. It is to be expected that the short-chain alkyl compounds would be much less effective than the long-chain ones in reducing the oil-solution interfacial tension, which would be a contributory factor in their being inferior demulsifier [2a, 2 b].

The most important of the synthetic surfactant carboxylate are the " Medialans " and

" Lampeons ". The former, structures of which recall " Igepon T " , are sarcosine derivatives of general formula $[R-CON(CH_3)CH_2COO^M]^+$ in which M^+ is a simple ion such as Na^+ and R-CO is a group such as stearyl ($C_{17}-CO$) or oyl ($C_{16}-CO$) [3].

A surfactant is a chemical compound that affects the surface forces of a liquid or a solid in relation to other liquids, solids or gases. The surfactants generally consist of a molecule in which one end is hydrophilic (water-loving) and the other end is lipophilic (oil-loving) [4a, 4b].

A dispersing agent is used to promot the suspension of fine particles of a solid in a liquid. Hence, both surfactants and colloidal thickeners may fit the definition. A dispersing agent must wet the surface of the solid; yet, at the same time, like an emulsifier, it must form a connecting like between particle and dispersing medium. The molecule is absorbed on the surface of the individual particles leaving