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194th ACS National Meeting

New Orleans, Louisiana
August 30-September 4, 1987

R.A. Mackay, J.W. Vanderhoff,
General Cochairmen

MONDAY MORNING - SYMPOSIUM ON POLYMERIC MICROEMULSIONS - POLYMERIZATIONS
IN ORGANIZED MEDIA (CONTINUED) - L.J. Mathias, Presiding

1. **POLYMERIZED VESICLES AND BILAYER LIPID MEMBRANES (BLMs), Janos H. Fendler, Syracuse University, Department of Chemistry, Syracuse, NY 13244-1200.**

Single bilayer vesicles and bilayer lipid membranes (BLMs) were prepared from $[C_{15}H_{31}CO_2(CH_2)_2]_2N^+(CH_3)CH_2C_6H_4CH=CH_2, Cl^-, (C_{18}H_{37})_2N^+(CH_3)CH_2C_6H_4CH=CH_2, Cl^-, (C_{18}H_{37})_2N^+(CH_3)CH_2CH_2OCOC_6H_4CH=CH_2, Cl^-,$ and $(C_{18}H_{33}O)[CH_2=CHC_6H_4NH-(CH_2)_{11}O]PO_2^-$. Irradiation with ultraviolet light led to the polymerization of these vesicles and BLMs. Polymerized vesicles and BLMs were found to be more stable than their unpolymerized counterparts. Properties of BLMs were monitored by simultaneous electrical (capacitance, voltage-dependent capacitance, conductivity) and spectroscopic (intracavity laser adsorption; steady-state, and subnanosecond time-resolved fluorescence; and reflection) techniques.

2. **EFFECT OF POLYMERIZATION ON PROPERTIES OF VESICLES DERIVED FROM ISOCYANO SURFACTANTS. R.J.M. Nolte, Laboratory of Organic Chemistry, Padualaan 8, 3584 CH Utrecht, The Netherlands**

Vesicles have been synthesized from double chain surfactant molecules containing isocyanate functions. These functions can be polymerized with nickel capronate. The polymerization process was followed by various techniques, including ^1H-NMR , electron microscopy, differential scanning calorimetry, and fluorescence. The data indicate that on polymerization the vesicle bilayer becomes more viscous and less polar. The lower polarity is partly due to the extrusion of water molecules.

The organized structure of a vesicle opens the possibility to control the course of a chemical reaction. Polymerized vesicles incorporating imidazolyl functions have been prepared and studied as chiral catalysts for the enantioselective hydrolysis of L and D-amino acid esters. Enantioselectivity ratios up to $k_L/k_D = 15$ have been obtained.

3. **EFFECT OF THE POSITION OF THE DOUBLE BOND ON THE POLYMERIZATION OF MICELLE FORMING QUATERNARY AMMONIUM SALTS. C.M. Paleos, A. Malliaris and P. Dais, N.C.R.N.S. "Demokritos" POB 60228, 153 70 Aghia Paraskevi, Attiki, Greece.**

In this work we have prepared two micelle forming polymerizable quaternary ammonium salts bearing the double bond in the one case on the ionic head, and in the other at the end of the aliphatic chain. Furthermore the structure of the polymerizable groups was slightly different in the two cases, i.e. $CH_2=CH-O-(C-O)-$ in the former and $CH_2=CH-(C-O)-O-$ in the latter. The polymerization was accomplished by UV-irradiation and the characterization of the products was achieved by fluorescence probing methods. It was found that the polymerization rate was very fast and practically identical in both cases. Micellar size before and after polymerization will be discussed, along with some observed special behavior of fluorescence quenching.