SUMMARY

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In the present study the following types of polymeric surfactants have been prepared.

I- A novel two series of oligomeric self-sequestering surfactants have been prepared by the reaction of itaconic acid, phthalic anhydride, citric acid with oxypropylated 1,4-butane diol and oxypropylated 1,6-hexane diol, respectively. The structure features of these oligo - meric surfactants have been confirmed by IR and ^{1}H NMR spectra. These oligomeric surfactants exhibit excellent properties of self-sequestering. Besides good surface-active properties including surface tension, interfacial tension, low-foaming, good wetting properties, good stability towards acidic and basic media, emulsifying power and dispersant properties, solubilization properties and good biodegradability, they possess autonomous sequestering ability without any help of additonal sequestering agent.

II- Two series of water-soluble polyester surfactants have been prepared by the polymerization of bis 1,4-(dicarboxymethoxy) benzene, maleic anhydride and oxypropylated 1,4-butane diol and oxypropylated 1,6-hexane diol respectively. The physical properties of these polyester surfactants such as acid value, hydroxyl value, molecular weight, number of repeating units, were studied. They

were confirmed by IR and ^{1}H NMR spectra. These water-soluble polyester surfactants have been found to exhibit excellent surface tension, interfacial tension , low foaming, good emulsifying wetting properties, good biodegradability in river water, solubilization and dispersant properties for the applied dyes. The antimicrobial and antifungal properties of the prepared polyester surfactants were measured and were found to be highly active .

III- Four series of nonionic copolymer surfactants have been prepared by the free radical polymerization of dioctyl itaconate with dipoly propylene glycol itaconate. The structural features of these nonionic copolymer surfactants have been confirmed by IR and ^{1}HNMR spectra. The surface active properties of these polymers were compared and evaluated, including solubility, cloud point, surface and interfacial tension, foaming emulsification and biodegradability . Most of the products are good biodegradable surfactants, which manifested the importance of their application in pollution problems.