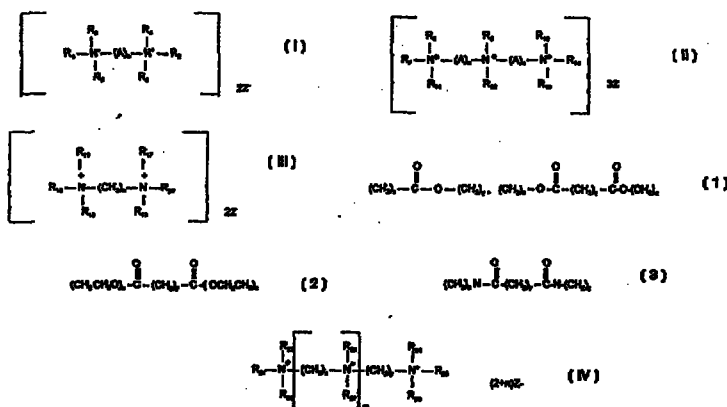




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(54) Title: CATIONIC GEMINI AND RELATED MULTIPLE HYDROPHILIC/HYDROPHOBIC FUNCTIONAL COMPOUNDS AND THEIR USE AS SURFACTANTS



(57) Abstract

A compound of general formula (I), (II), or (III): wherein each of R₁ through R₂₀ are independently selected from straight or branched chain, substituted or unsubstituted C₁-C₂₂ alkyl or alkenyl groups, wherein said alkyl or alkenyl groups optionally contain at least one ester linkage, at least one amide linkage, or mixtures thereof; A is a space group of formula (1) or (2), (3) or an amide group; and X₁ and X₂ are the same or different and are selected from C₁-C₂₂ substituted or unsubstituted alkyl, C₁-C₂₂ substituted, or unsubstituted alkenyl wherein said alkyl or alkenyl group optionally contain at least one ester linkage; and wherein in each of formula (I), (II) and (III), Z is an anion, with the proviso that R₁₅ and R₂₀ are not the same. The invention also relates to a compound of formula (IV) wherein R₂₁, R₂₂, R₂₃, R₂₄, R₂₅, R₂₆, R₂₇, and R₂₈ are the same or different and are selected from straight or branched chain, substituted, or unsubstituted C₁-C₂₂ alkyl or alkenyl groups, wherein said alkyl or alkenyl groups optionally contain at least one ester linkage, at least one amide linkage or mixtures thereof, and where x and y are each independently an integer of from 1-20, n is greater than 1 and Z is an anion, and to processes for preparing these compounds.