Abstracts for Poster Presentations

Poster presentations will be displayed on the north wall of the exhibit hall. Posters will be put on display Monday, with authors expected to be at their displays during lunch breaks on Monday, Tuesday and Thursday, as well as at the conclusion of each day's technical program.

P-1 Polymers as Anti-redeposition Agents

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In addition to their ability to function as production and builder assists, polymers of acrylic acid and their carboxyl-containing copolymers have the unique property of functioning as anti-redeposition agents. This paper presents data for polymers and copolymers of varying molecular weights on their ability to prevent the deposition of black and red iron oxide in a simulated wash system. The data show that these carboxyl-containing polymers and copolymers are effective as anti-redeposition agents down to a few parts per million concentration.

P-2 Fabric Softeners

Richard A. Reck
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The fabric softener business started in the early 1950s, when a need developed due to the change from tallow soap detergents to synthetic detergents, which created a harsh-finished fabric. Data from the commercial textile-treating industry suggested that the use of dialkylquaternaryammonium compounds containing 16–18 carbon atoms gave the best performance, although there is mention that a quaternary ammonium compound with one long chain of 22 carbon atoms could result in good fabric softening. The home and institutional fabric softener business can be categorized in three general products areas: (a) rinse cycle formulations; (b) dryer-added formulations; and (c) wash cycle formulations that contain fabric softeners, antistatic agents or both. Products satisfying the needs of all three classes of fabric softeners will be discussed. With regards to (a), there are many molecules that could be used as fabric softener bases for rinse cycle formulations. Although currently there are three of large commercial significance, several other candidates are being commercialized: dimethyldihydrogenatedtallowammonium chloride; imidazolinium quaternaries; alkoxylated amidoammonium quaternaries; ditallowmethylalkoxylated ammonium quaternaries; and ditallowdialkoxylated ammonium quaternaries. The five classes of quaternary ammonium compounds listed have all been evaluated as fabric softeners using various panel tests. Generally speaking they are rated in the following order (starting with the highest rating): 1, 4, 5, 2 and 3. With regards to (b), dryer-added fabric softeners were introduced in 1949. The formulations are based on impregnating a substrate with a combination of a nonionic transfer agent and a quaternary ammonium compound. The nonionics are usually ethoxylated esters or alcohols and the quaternary is almost always dimethyldihardtallowammonium methyl sulfate. A large variety of nonionics is used, resulting in many end products. The Akzo Chemie DA series are produced in the absence of solvent, which results in limited vapor hazards. With regards to (c), the use of wash cycle detergents containing fabric softeners has been hindered by the incompatibility of the cationic softener with the anionic portion of the detergent formulations. This problem has been resolved by the introduction of the right cationics and anionics. The use of hydrophilic substitutions into the cationic molecule has solved most of the formulation problems. The wash cycle fabric softener formulations may be liquid or solid. The use of powdered quaternaries in solid formulations is well known. Recently there has been introduced the use of quaternary ammonium compounds to enhance the detergency of formulations. The scientific reason for this is the adjustment of the CMC level of the surfactants involved by the combination of nonionic and cationic surfactants. Raising the CMC level prevents the redeposition of oily soil on the washed fabrics. A large number of cationics have been investigated in this study.

P-3 SO_3—Sulfonation Technology for Surfactant Specialties

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SO_3 sulfonation ether in stirred vessel cascade system, multitube film reactor or multi-stage jet reactor is applied for the production of petrosulfonates from various petroleum fractions or from heavy alkylates. In specific cases diluent solvents are used. The acid sulfonates are separated and extracted by a novel process and are transformed by neutralization, in absence of water, directly into alkali, alkaline earth or organic base sulfonates. Process data and product specification are given. A brief review of applications of specialty surfactants, mainly petrosulfonates, as lubeoil additives, emulsifiers in industry and agriculture concludes the paper.

P-4 Manufacture of Soaps and Detergents via a Novel Process

Richard J. Bertozzi (presenter), E. Gary Myers, Julian R. Story and Rex O. Daniels
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A new, efficient and cost-effective process for the manufacture of soaps and detergents in both unfinished and fully formulated forms utilizing novel intensive mixing technology will be discussed. The process is adaptable for both large integrated plans and small regional manufacturing installations (satellite plants) using readily available feedstocks. The manufacture of soap pellets, soap powders, formulated soap bases, household laundry and detergent products, and custom blending operations are now feasible without the need for steam or vacuum spray drying equipment. This process provides a unique combination of soap and detergent manufacturing capability in a versatile single unit operation.