into the stratum corneum and underlying skin layers. Yet, there are many instances when epidermal localization of a drug is desirable, but absorption beyond the epidermis is not.

Corticosteroids are a typical example. Although effective for skin disorders, their topical application can result in significant systemic absorption; this may lead to unwanted side effects such as adrenal suppression or interference with immune functions (2).

Similarly, with sunscreens it is necessary to maximize the amount of time that the active ingredient is present on the skin surface or within the outer layers of the epidermis while minimizing its transepidermal penetration into the body.

Another problem with the application of topical drugs is that many vehicles, such as ointments, often prove aesthetically unappealing. Greasiness, stickiness, or even discolorations in clothing can make daily wear unpleasant. This frequently results in the patient's lack of compliance with treatment.

Many of these conventional vehicles require high concentrations of active agents for effective therapy because of their low efficiency as delivery systems. As a consequence, irritation or allergic responses can be elicited in a significant percentage of users. Other disadvantages of existing topical drug formulations can be uncontrolled evaporation of the active ingredient, unpleasant odor, and the potential incompatibility of one or more drugs with each other or with the vehicle.

Thus, the need exists for systems to maximize the amount of time that an active ingredient, such as a sunscreen, is present, either on the skin surface or within the epidermis, while minimizing its transdermal penetration into the body.

Such a new system would possibly increase the efficacy of topically active agents while enhancing product safety.

The Microsponge® polymeric microsphere system uniquely fulfills these requirements. These tiny spongelike spherical particles (Fig. 1) can entrap active ingredients and then release them onto the skin over time and in response to a trigger. They are biologically inert, nonirritating, nonmutagenic, nonallergenic, nontoxic, and nonbiodegradable. They can extend product stability because of their unique configuration and improve its aesthetic properties.

II. MICROSPONGE TECHNOLOGY

Microsponges are patented (3) polymeric delivery systems consisting of porous microspheres that can entrap a wide range of active ingredients, such as emollients, fragrances, essential oils, sunscreens, and anti-infective, antifungal, and anti-inflammatory agents. These