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# United States Patent [19]

**Boyle et al.**

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[54] **ENCAPSULATION OF OLEOPHILIC SUBSTANCES AND COMPOSITIONS PRODUCED THEREBY**

[75] Inventors: **Stasia Boyle**, Wayne; **Kuei-Tu Chang**, Mountain Lakes, both of N.J.

[73] Assignee: **Roche Vitamins Inc.**, Parsippany, N.J.

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**Related U.S. Application Data**

[63] Continuation of application No. 08/439,787, May 24, 1995, which is a continuation-in-part of application No. 08/269,720, Jul. 1, 1994, abandoned.

[51] **Int. Cl.**[6] ..... **A61K 9/14**

[52] **U.S. Cl.** ..... **424/499**; 424/484; 424/488; 424/489

[58] **Field of Search** ..... 424/484, 488, 424/489, 499

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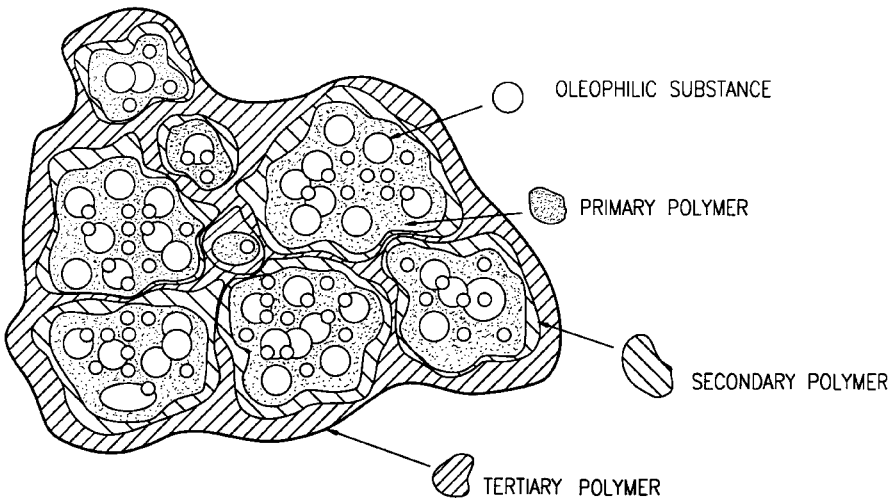
*Primary Examiner*—Robert H. Harrison

*Attorney, Agent, or Firm*—George W. Johnston; Dennis P. Tramaloni

[57] **ABSTRACT**

Multiple micro-encapsulations of a high concentration oleophilic substance using heat to set the primary particle renders the composition suitable for the production of free-flowing powders or beadlets. Microencapsulation involves forming an emulsion out of the oleophilic substance and a polymer, and then use heat setting and/or cross-linking the polymer encapsulates the oleophilic composition. This process is then repeated with a second polymer or third polymer, and with or without cross-linked via the same or different mechanism to further protect the oleophilic substance.

**11 Claims, 5 Drawing Sheets**