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Principles of Emulsion Formulation Engineering

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ABSTRACT

Emulsion properties depend mainly upon three kinds of variables: physicochemical formulation, composition, and manufacturing protocol. The current state of the art allows the interpretation of the effects of these variables on such properties in the framework of a generalized phenomenology that includes temporal changes, either instantaneous or delayed, as they take place in manufacturing processes. The know-how can be readily translated into guidelines and constraints concerning the process operation and equipment design. This approach is referred to as formulation engineering.

I. INTRODUCTION

Emulsions are encountered both in nature and in many man-made goods. They are used in two-phase products such as foodstuff, paints, pharmaceuticals, cosmetics, and many others. Alternatively, they provide some interfacial or operational property of interest such as a high contact area in liquid-liquid extraction and emulsion polymerization or a controlled mass transfer rate in drug release and pollution remediation. They are

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