

## Book Review

### Bicontinuous liquid crystals

**Matthew L. Lynch and Patrick T. Spicer (Editors)**

Taylor & Francis, 477 pages, ISBN-1-57444-449-2

Bicontinuous structures are built up by two interpenetrating but not intersecting domains separated by a surface. The most liquid-crystalline bicontinuous phases are based on a bilayer structure which separates two continuous but distinct aqueous domains. Such materials are not only quite interesting from the theoretical point of view they also open many possibilities for practical applications.

The book under discussion which corresponds to volume 127 in the Surfactant Science Series is organized in three sections. The various chapters within the sections are written by 24 experts worldwide. This provides the advantage that most of the chapters can be read alone without necessarily having read the preceding chapter.

The first section "Theoretical Aspects and Modeling of Bicontinuous Phases" is focussed on the structural characterization of cubic and intermediate (ribbon, mesh) phases. The topology of these phases is described in terms of differential geometry and of infinite periodic minimal surfaces.

Section 2 "Physical Chemistry and Characterization" is dealing with microscopic and macroscopic physical properties of bicontinuous phases including sample preparation and structural studies using different techniques. Not only aqueous systems but also biological lipids, polymers or block copolymers are involved. Of special interest is the so-called sponge phase which has a cubic-like structure without long-range order.

Section 3 "Applications" is the biggest section which demonstrates the unique potential of bicontinuous liquid crystalline phases for application, e.g. as controlled-release drug delivery systems, for fabrication of controlled-porosity ceramics, for protein crystallization, membrane fusion or treatment of human skins.

To sum up, this book represents a comprehensive overview of the topical subject of bicontinuous liquid crystalline systems. Most of bibliographic references are readily available giving rapid access to more detailed high level information when needed. Unfortunately, thermotropic liquid crystals with bicontinuous structures which have a lot of unusual interesting properties are not taken into account.

Nevertheless, this book can be recommended to physicists, chemists or biologists who are interested in material science. It can also inspire young scientists to come into this fascinating and interdisciplinary field.

Gerhard Pelzl