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Self-assembling of oleic acid (*cis*-9-octadecenoic acid) and linoleic acid (*cis*-9, *cis*-12-octadecadienoic acid) in ethanol studied by time-dependent attenuated total reflectance (ATR) infrared (IR) and two-dimensional (2D) correlation spectroscopy.

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The dynamic behavior of liquid oleic and linoleic acids in ethanol has been explored by applying attenuated total reflectance (ATR) infrared (IR) spectroscopy. Fine spectral features are obtained with two-dimensional (2D) correlation spectroscopy. When the solution mixture was exposed to the open atmosphere, the complexes between the carboxylic acids and ethanol begin to dissociate and it starts the formation of dimers of the carboxylic acids. As the evaporation proceeds, the dimeric molecules undergo the self-assembling to form tightly packed quasi-smectic liquid crystal structure. The hetero-system 2D correlation spectra developed with two sets of time-dependent ATR–IR spectra of oleic and linoleic acids reveal that linoleic acid molecules aggregate faster as compared with oleic acid ones during the self-assembling mostly due to the difference in the number of the CC bonds.

Słowa kluczowe

Self-assembling, Oleic acid, Linoleic acid, Binary mixtures, Two-dimensional correlation spectroscopy, ATR–IR spectroscopy

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