135
标题: Dielectric relaxation change of water upon phase transition of a lipid bilayer probed by terahertz time domain spectroscopy
作者: Choi, DH (Choi, Da-Hye); Son, H (Son, Heyjin); Jung, S (Jung, Seonghoon); Park, J (Park, Jaehun); Park, WY (Park, Woong-Yang); Kwon, OS (Kwon, Oh Sang); Park, GS (Park, Gun-Sik)
来源出版物: JOURNAL OF CHEMICAL PHYSICS 卷: 137 期: 17 文献号: 175101 DOI: 10.1063/1.4764304 出版年: NOV 7 2012
在 Web of Science 中的被引频次: 0
被引频次合计: 0
引用的参考文献数: 31
摘要: We investigate the influence of the 1, 2-ditetradecanoyl-sn-glycero-3-phosphocholine lipid bilayer phases on the water reorientation dynamics with terahertz time domain spectroscopy. The phase of the lipids was controlled by the temperature in the range of 14-35 degrees C. During the gel-to-fluid phase transition, the hydration water ratio drastically changed from 0.3 to 0.6. The absorption coefficient of the hydration water increased with the temperature in the gel phase and then decreased in the fluid phase. The dielectric relaxation time of the lipid solution decreased initially but then increased after the phase transition. This indicates that the hydration water reorientation dynamics are restricted by lipids and that this phenomenon is pronounced in a biologically relevant fluid phase. (C) 2012 American Institute of Physics. [http://dx.doi.org/10.1063/1.4764304]
入藏号: WOS:000310854000040
语种: English
文献类型: Article
作者关键词: absorption coefficients; biochemistry; dielectric relaxation; lipid bilayers; organic compounds; terahertz spectroscopy; time-domain analysis
KeyWords Plus: INFRARED-SPECTROSCOPY; NEUTRON-SCATTERING; LIQUID-WATER; DYNAMICS; MEMBRANES; HYDRATION; SIMULATION; MODEL; TEMPERATURES
地址: [Choi, Da-Hye; Son, Heyjin; Park, Gun-Sik] Seoul Natl Univ, Dept Phys & Astron, Ctr THz Bio Applicat Syst, Seoul 151747, South Korea
[Jung, Seonghoon; Park, Jaehun] POSTECH San 31, Pohang Accelerator Lab, Pohang 790784, South Korea
[Park, Woong-Yang] Seoul Natl Univ, Coll Med, Dept Biomed Sci, Seoul 151747, South Korea
[Kwon, Oh Sang] Seoul Natl Univ, Coll Med, Dept Dermatol, Seoul 151747, South Korea
通讯作者地址: Choi, DH (通讯作者),Seoul Natl Univ, Dept Phys & Astron, Ctr THz Bio Applicat Syst, Seoul 151747, South Korea.
电子邮件地址: gunsik@snu.ac.kr
出版商: AMER INST PHYSICS
出版商地址: CIRCULATION & FULFILLMENT DIV, 2 HUNTINGTON QUADRANGLE, STE 1 N O 1, MELVILLE, NY 11747-4501 USA
Web of Science 类别: Physics, Atomic, Molecular & Chemical
研究方向: Physics
IDS 号: 034EU
ISSN: 0021-9606
29 字符的来源出版物名称缩写: J CHEM PHYS

ISO 来源出版物缩写: J. Chem. Phys.
来源出版物页码计数: 5