

# Evaluation of Liposome Membrane Fluidity by Fluorescence Anisotropy

## INTRODUCTION

The drug delivery systems (DDS) is drawing attention for new drug development (See Information Forum vol. 140 (2011.3.15)). Liposome used for the DDS is a lipid-based nanoparticle. It has a structure similar to cell membrane and is produced artificially.

The properties of this lipid-based nanoparticle that enable its applicability to the DDS include the membrane fluidity and phase transition temperature. In order to evaluate the membrane fluidity and phase transition temperature, a fluorescence dye is introduced to liposome and the fluorescence anisotropy is measured.

The fluorescence anisotropy can be measured by using F-7000 fluorophotometer with the polarization accessory. For the phase transition temperature, it is convenient to use a cell holder with programmable temp control as gradual temperature change is required. The result of the fluorescence anisotropy measurements at different temperatures confirmed that the anisotropy changes when the temperature becomes higher than 42.5°C. This result indicates that the phase transition temperature of this liposome is 42.5°C.

### SAMPLE

Sample : DPPC liposomes (Funakoshi Corporation)  
 Fluorescence Probe : DPH/TMA-DPH

### ACCESSORY

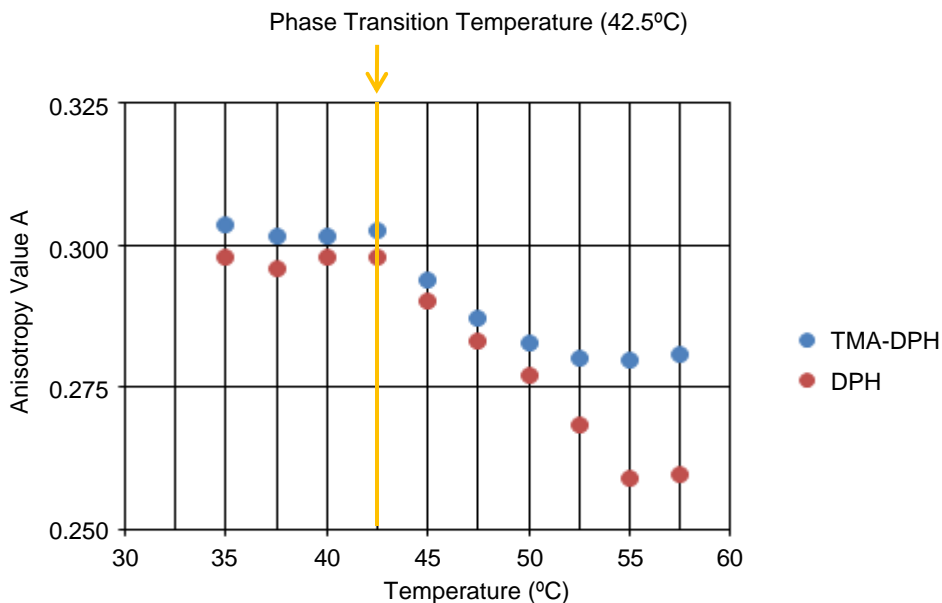
Cell holder with programmable temp control (P/N : 5J0-0143/0144)



### ANALYSIS CONDITIONS

Instrument	: F-7000		
Measurement mode	: quantitative analysis	Integration time	: 2.0 sec
Date mode	: fluorescence	Slit on excitation side	: 5 nm
Wavelength setting	: two-wavelength setting	Slit on fluorescence side	: 10 nm
Excitation wavelength	: 360 nm	Detector	: R3788
Fluorescence wavelength	: 430 nm	Photomultiplier Vol.	: 400 V

Polarization accessory (for VIS) (P/N : 650-0156)



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### KEY WORDS

Bio/Medical Science/Food/Pharmaceutical Related, Biochemistry, Medicine/Pharmaceutical, Liposome, DPH, TMA-DPH, Phospholipid Bilayer Membrane, Membrane Fluidity, Anisotropy, Phase Transition Temperature, Fluorescence Polarization, Polarizer, DDS, Polarization FL, F-7000

Fluorophotometer (FL)

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