KATJONO UN ANJONO LIPĪDU ATTĪSTĪBAS PERSPEKTĪVAS

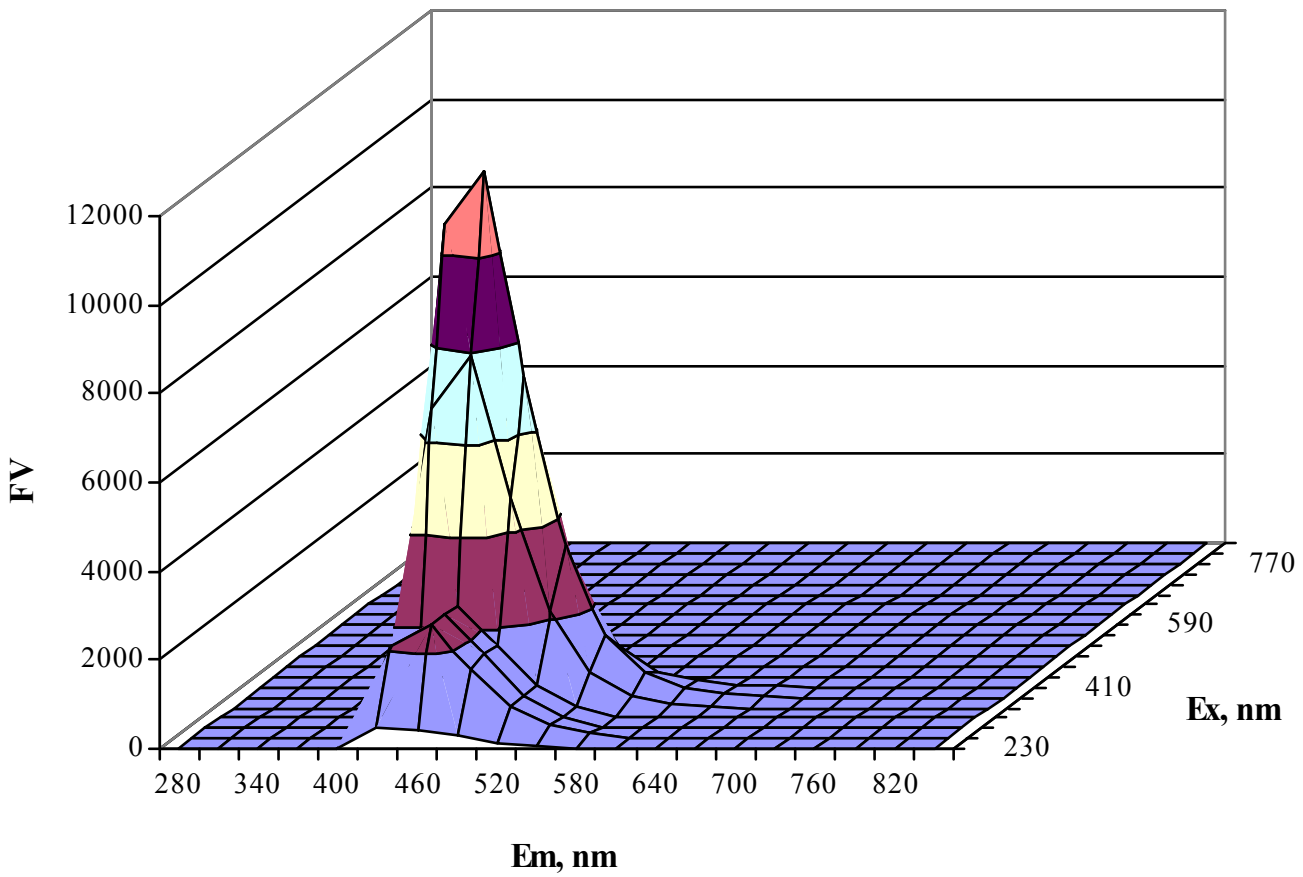
VPP-7-3

G.DUBURS

SEMINĀRS

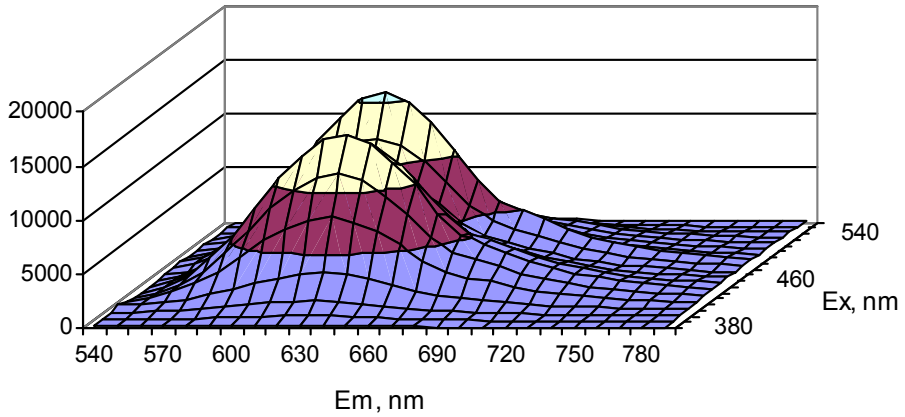
11.12.2012.

Luminescences spektrs -- D19

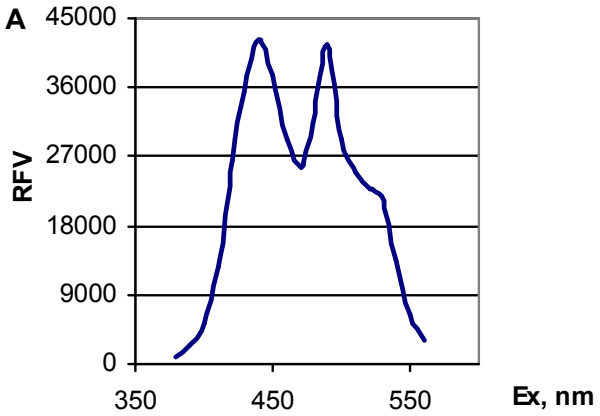


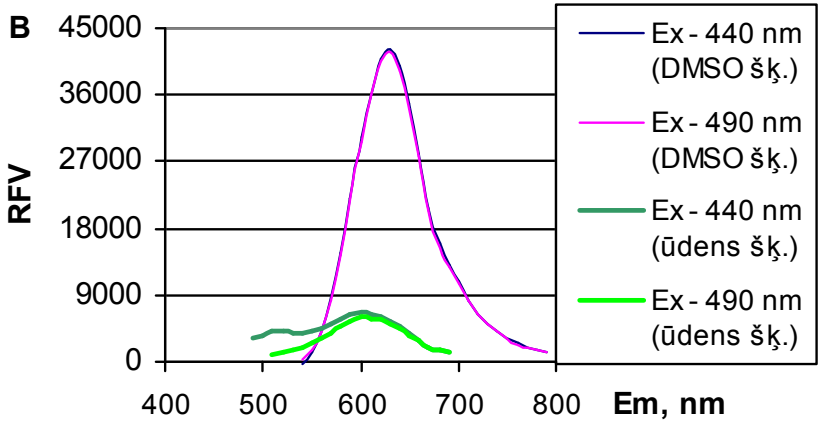
Mērījumu robežas: Ex 230-830nm un Em 280-820nm (koncentrācija 1 mg/ml).

Luminescences spektrs – luminescentās zondes



Fluorescences spektrs savienojumam V-K87, konc. 0.002 mM

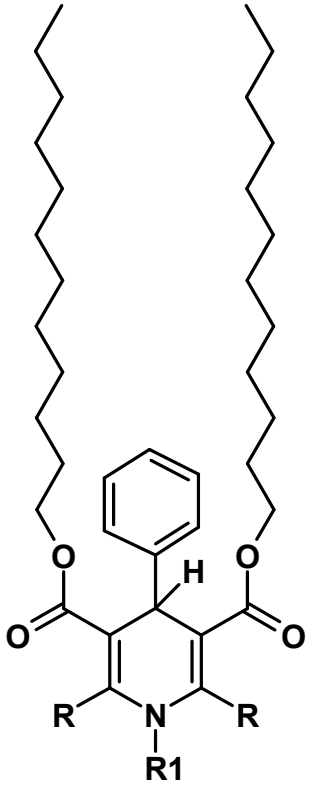


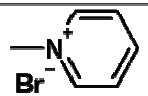
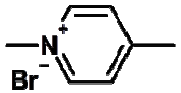
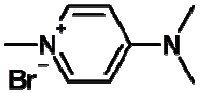
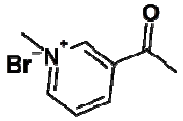
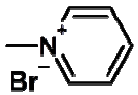


A: savienojuma V-K87 emisijas intensitāte pie 630 nm ar dažādiem ierosinošajiem viļņa garumiem

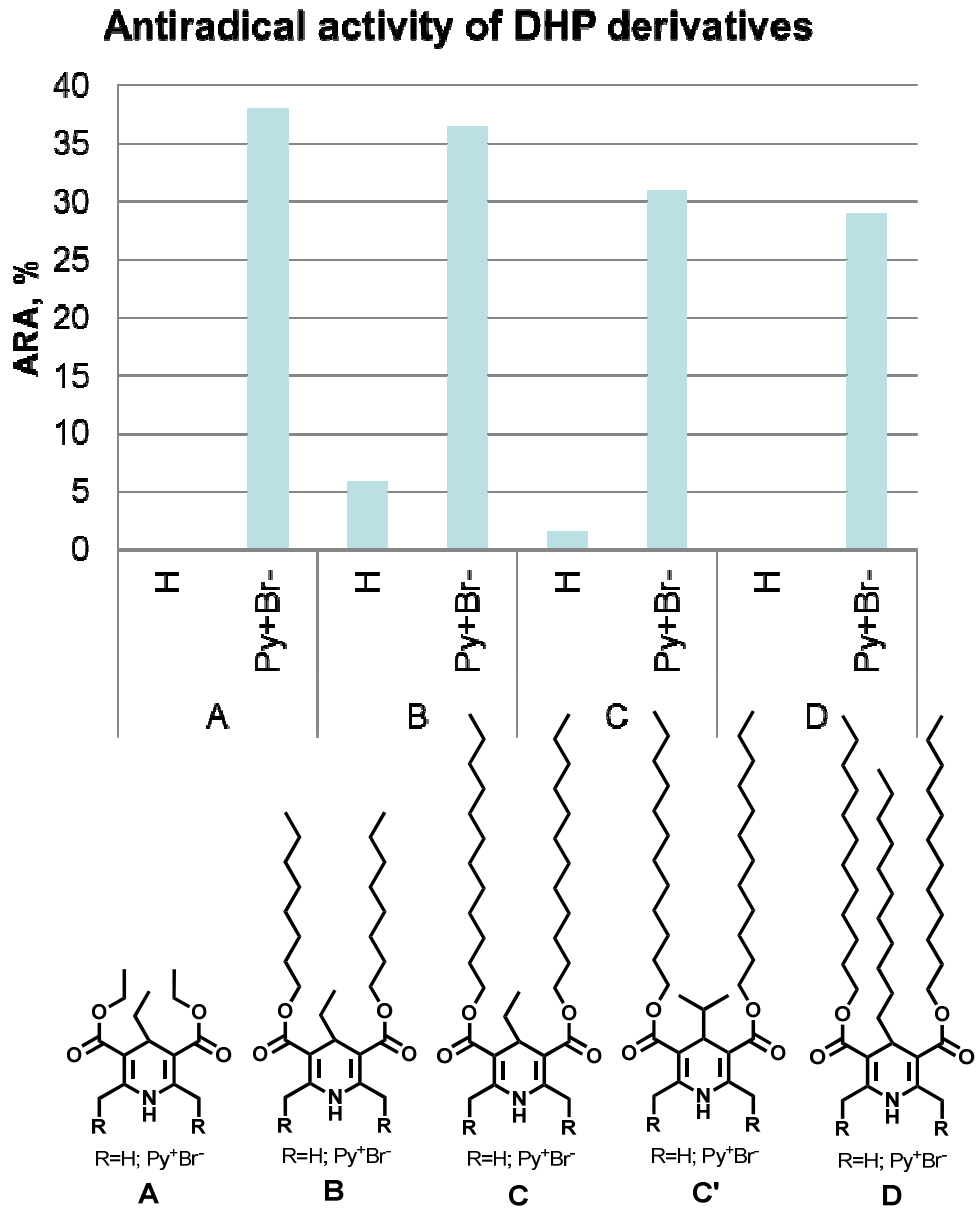
B: savienojuma V-K87 emisijas intensitāte pie ierosinošajiem viļņa garumiem 440 nm un 490 nm (savienojuma konc. 0.002mM)

ARA of 4-phenyl-3,5-didodecyl-oxycarbonyl-1,4-DHP derivatives substituted at 2,6-dimethyl groups



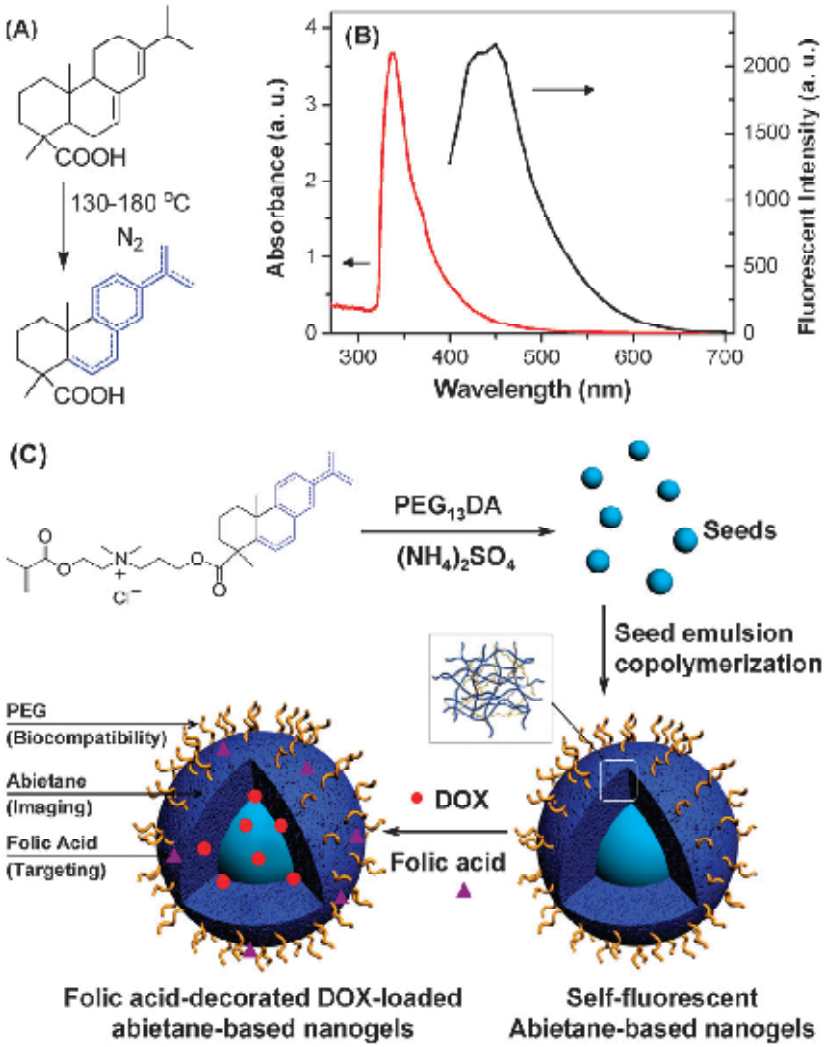
R	R_1	ARA(%)
H	H	**0**
Br	H	0
	H	**39.5±0.3**
	H	41.2±2.6
	H	27.5±0.2
	H	35.9±2.3
	CH_3	7.3±0.4
DPPC		0

ARA of 4-alkyl-3,5-didodecyloxycarbonyl-1,4-DHP derivatives substituted at 2,6-dimethyl groups



Multifunctional self-fluorescent polymer nanogels for label-free imaging and drug delivery

Y.Chen, P.A.Wilbon, J.Zhou, M.Nagarkatti, C.Wang, F.Chub, C.Tang, *Chem. Commun.*, 2013, **49**, 297--299



Multifunctional abietane-based polymer nanogels were fabricated for label-free cell imaging and drug delivery. The self-fluorescent abietane as the framework of carriers enables the imaging without the need for external fluorescent probes, while abietane-based nanogels exhibit low in vitro cytotoxicity.

(A) Isomerization of abietic acid into fluorescent abietane-based acid by thermal treatment; (B) UV-vis absorption (red line) and fluorescent emission (black line) spectra of abietic acid after thermal treatment; (C) Schematic illustration of preparation of multifunctional abietane-based nanogels.

GPCR in cubic and lamellar lipidic mezophases

Why GPCRs behave differently in cubic and lamellar lipidic mesophases.

G.Khelashvili, P.B.C.Albornoz, N.Johner, S.Mondal, M.Caffrey, H.Weinstein, *J. Am. Chem. Soc.* 2012, **134**, 15858−15868.

Recent successes in the crystallographic determination of structures of transmembrane proteins in the G protein-coupled receptor (GPCR) family have established the lipidic cubic phase (LCP) environment as the medium of choice for growing structure-grade crystals by the method termed "in meso". The understanding of in meso crystallogenesis is currently at a descriptive level. To enable an eventual quantitative, energy-based description of the nucleation and crystallization mechanism, we have examined the properties of the lipidic cubic phase system and the dynamics of the GPCR rhodopsin reconstituted into the LCP with coarse-grained molecular dynamics simulations with the Martini force-field.

Quantifying the differences in the hydrophobic/hydrophilic exposure of the GPCR to lipids in the cubic and lamellar phases, we found that the highly curved geometry of the cubic phase provides more efficient shielding of the protein from unfavorable hydrophobic exposure, which leads to a lesser hydrophobic mismatch and less unfavorable hydrophobic−hydrophilic interactions between the protein and lipid−water interface in the LCP, compared to the lamellar phase. Since hydrophobic mismatch is considered a driving force for oligomerization, the differences in exposure mismatch energies between the LCP and the lamellar structures suggest that the latter provide a more favorable setting in which GPCRs can oligomerize as a prelude to nucleation and crystal growth. These new findings lay the foundation for future investigations of in meso crystallization mechanisms related to the transition from the LCP to the lamellar phase and studies aimed at an improved rational approach for generating structure-quality crystals of membrane proteins.