W0545

Structural and Functional Properties of Glycosphingolipid-containing Mixture as a Model Raft. M. Hirai, Dept. of Physics, Gunma Univ., Maebashi 371-8510, Japan.

So-called rafts or glycosphingolipids (GSLs) signaling microdomains in plasma membrane are now attracting a huge interest in cell biology since they are assumed to act as a molecular device for membrane-associated events such as signal transmission, cell adhesion and so on. Gangliosides, major components of GSLs, are acidic lipids composed of a ceramide linked to an oligosaccharide chain containing one or more sialic acid residues, which are rich in central nervous system. Functionality of the GSLs microdomains is assumed to be closely related to the peculiar features both in ceramide and oligosaccharide portions which can form complex hydrogen bonding networks. A recent spectroscopic study suggests that amyloid β proteins (Aβ) interact strongly with gangliosides to promote the structural transition of Aβ from helix to sheet that result in the seeds of amyloid fibrils. By using synchrotron radiation (SR) X-ray and neutron scattering techniques, we have clarified several notable characteristics of the aggregated structures of ganglioside micelles and ganglioside-containing vesicles, and also the interaction between those aggregates and model ligands such as cholera toxin B-subunit and amyloid protein. The functionality of ganglioside aggregates clarified by using the scattering techniques will be shown.