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Factors Affecting the Self Assembly of Amyloid Peptides. S.V. Pingali¹, Y. Liang³, P. Liu³, S.W. Childers³, K. Lu³, L. Guo², D.G. Lynn³, P. Thiyagarajan¹, ¹IPNS, ²BioCAT, APS Beamline, Argonne National Lab, IL, ³Emory Univ., Atlanta, GA.

Amyloid peptide's unique amphiphilic character allows the peptide to self-assemble in aqueous media into well-organized fibrillar structures. In order to study the self-assembly process of the smaller variant A β_{16-22} (KLVFFAE), fluorescent labels such as Rhodamine 110 (Rh) and Rhodamine B (Rb) are used. Our studies show that fluorescent labels strongly influence the morphology of the self assembled nanotubes. A 9:1 mixture of A β_{16-22} and Rhodamine 110 attached A β_{17-22} (Rh-LVFFAE) as well as a 9:1 mixture of A β_{16-22} and Rhodamine 110 attached A β_{16-22} (Rh-KLVFFAE) results in the formation of narrower tubes. Interestingly, when a glycine is used to link Rhodamine 110 to A β_{16-22} (Rh-G-KLVFFAE) or when Rhodamine B is attached to Lysine (Rb-KLVFFAE), the mixture self assembles into nanobubes with similar outer radius as A β_{16-22} . We believe that the difference in the morphology of the nanotubes is due to the alteration of the packing parameter of the hydrophobic moieties and the effective charge of the peptides leading to variation in the interfacial curvature.

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