



Imparting Chiral Optical Properties to Achiral Molecules using Helical Molecular Assembly Composed of an Amidoamine Derivative

Kento Imamura[†], Takeshi Kawai*

Department of Industrial Chemistry, Tokyo University of Science*

*E-mail : kawai@ci.tus.ac.jp

Abstract: Chirality is an important and active research topic in chemistry and biology. We have reported that the circular dichroic (CD) peaks of achiral azobenzene (AZO, Fig. 1 (a)) compounds appeared within 24 h, when they are incorporated in a helical molecular assembly composed of an amidoamine derivative with a long linear alkyl chain (C18AA, Fig. 1 (a)) and 12- hydroxy stearic acid (HSA, Fig. 1 (a)). In this study, aiming at promoting the appearance of the CD peaks, the incorporation mechanism of AZO into helical nanofibers composed of an amidoamine derivative with an unsaturated alkyl- chain (OleylAA, Fig. 1 (a)) and HSA were investigated. As shown in Fig. 1 (b), CD peaks assignable to AZO and the nanofibers themselves appeared in the hybrid nanofibers (350 and 270 nm, respectively), indicating that AZO was successfully incorporated within the OleylAA- nanofibers. Moreover, the CD peak of AZO appeared within 10 min. The earlier appearance of the CD peak indicates that AZO is more easily incorporated in OleylAA- nanofibers, which is facilitated by the bent structure of OleylAA.

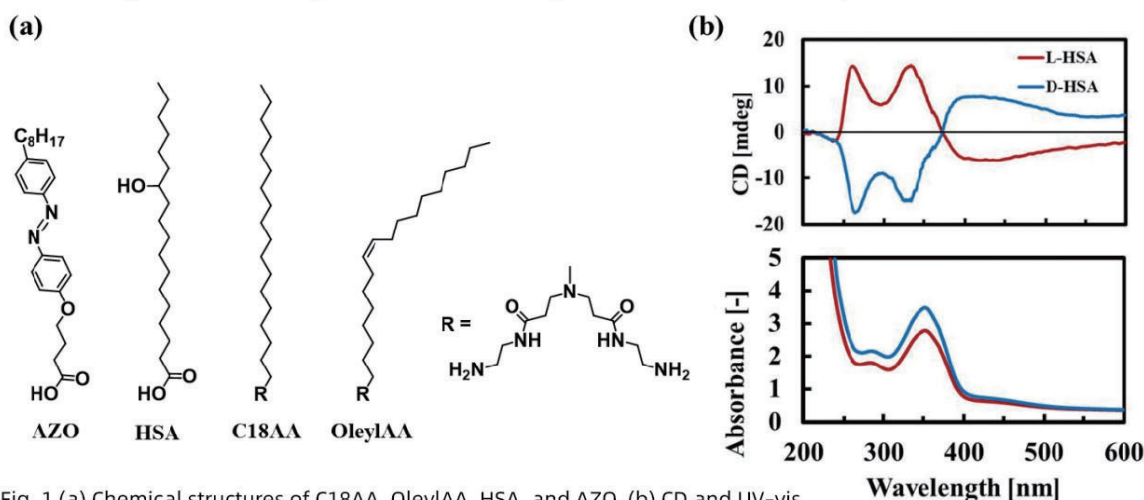


Fig. 1 (a) Chemical structures of C18AA, OleylAA, HSA, and AZO. (b) CD and UV-vis adsorption spectra of AZO embedded in OleylAA and HSA chiral nanofibers.

Keywords: Helical superstructure, Amidoamine, Azobenzene, Photo responsive, Circular Dichroism

[†] **Present address:** Tokyo Institute of Technology, Dept. Chemical Sci. Eng.