

SUMMARY OF Ph.D. DISSERTATION

School Fundamental Science and Technology	Student Identification Number	SURNAME, First name YAMAMOTO, Takashi
Title Creation of Photofunctional Ultrathin Films ———Bottom-Up Approach from the Air–Water Interface———		
Abstract <p>There have been growing interests in “light” as the mediator for information. Particularly in magnetic media, the photon-mode enables to access with extremely high-speed and high-density. On the other hand, there have also been paid much attention to the light-driven molecular machines and supramolecular system.</p> <p>In this dissertation, photocontrollable magnetic ultrathin films and photo-driven molecular recognition system have been constructed by the bottom-up approach from the air–water interface.</p> <p>A brief introduction and the outline for the dissertation are given in Chapter 1, followed by the detailed description in Chapter 2.</p> <p>Fabrication of ternary LB films with clay minerals have led to highly efficient photoinduced changes in the magnetization (Chapter 3). In case of ternary LB films with DNA, they have not worked efficiently compared to the above case (Chapter 4). Binary LB films of polyoxometalates have offered a new mechanism for photoinduced changes in the magnetization (Chapter 5). Templated fabrication of ultrathin films of the photomagnets has also been examined by using ternary LB films with clay minerals. In this case, the anisotropic photoinduced magnetization effect has been observed for the first time (Chapter 6)</p> <p>Photoresponsive molecular recognition system has been constructed in Chapter 7 by using DNA and the photochromic intercalator. Photoinduced dynamic intercalation has been observed only in the case of composite monolayers formed at the air-water interface.</p>		