

## **Structure and dynamics of induced smectic liquid crystalline phase**

Shin-ya Sugisawa

*Department of pure and applied physics, Waseda University.*

Binary systems composed of polar and non-polar liquid crystalline molecules exhibit novel ordered smectic phases, and these phases are known as induced smectic phases (ISP). One of the most important characteristics is that the realized phases possess very high order close to crystals, and such phases are never observed in the case of each mono-component. Although the existence of such phases have been known since about 40 years ago, the origin has not completely understood except for the experientially understanding that the appearance of ‘induced dipole’ in the non-polar molecule due to the polar one plays a key role. We attempted to understand the origin of ISP through the understanding of inner structures, and performed structural analyses by means of small-angle X-ray scattering (SAXS) and FT-IR spectrum measurements. In the presentation, we show detailed results and our scenario of the origin of ISP. In addition, as an example of dynamic properties deriving from the structures of ISP, we show the anomalous type of disruption dynamics, and discuss the physical mechanism.