



先端光量子科学アライアンス談話会・光量子科学研究センターセミナー・フotonサイエンス研究機構セミナー・  
コヒーレントフォトン技術によるイノベーション拠点(ICCPT)セミナー・  
フotonサイエンス・リーディング大学院・東京大学統合物質科学リーダー養成プログラム  
最先端融合科学イノベーション教育研究コンソーシアム (CIAiS)

## “Electronic and spin structure investigations on Dirac and Rashba materials and beyond”

**Prof. Oleg E. Tereshchenko**

**(Novosibirsk State University,**

**Institute of Semiconductor Physics SB RAS)**

日時：平成29年2月28日(火) 13:30-15:00

場所：東京大学理学部1号館2階201A号室

### Abstract

It is of great interest to create the inversion asymmetric topological insulators because these materials are desirable for hosting both a large Rashba spin-splitting (RSS) and robust topological surface states (TSS), which are potentially interesting in realization of new topological phenomena in practical material systems.

In first part of the talk, I will discuss on the growth of various TIs by modified Bridgman method using rotating heat field [2] and in particular built in p-n junction [3] will be considered. Recent results on the BiTeI electronic structure [1] transformation forming a sequence of intermediate spin-polarized states, reflecting the transition from RSS to a mixed type of states characterized by gapless TSS and preserving RSS will be presented.

In the second part of the talk, I will concentrate on the experimental study of polarized cathodoluminescence induced by low-energy spin-polarized electrons injected into GaAs/AlGaAs QWs structures with the aim to create 3D spin-detector with spatial resolution which can be integrated into the registration channel of modern ARPES systems.

[1] K.A. Kokh *et al.*, Cryst. Eng. Comm. **16**, 581 (2014).

[2] T. Bathon *et al.*, Advanced Materials **28**, 2183 (2016).

[3] H. Maass *et al.*, Nature Communications **7**, 11621 (2016).

紹介教員:湯本潤司教授 (フotonサイエンス研究機構)