W2S Seminar
(Webinar series on Spintronics)

Anomalous Nernst effect for novel thermoelectric applications

Speaker:
Prof. Yuya Sakuraba
Group Leader of Magnetic Materials Group
National Institute for Materials Science (NIMS)

Date and time:
24th Sep.2020 at
6.30 pm
Via
Zoom

Abstract

Anomalous Nernst effect (ANE) is a thermoelectric phenomenan in magnetic materials that generates an electric field (***E***) to the perpendicular direction to both magnetization and given temperature gradient ($\nabla \boldsymbol{T}$). The orthogonal relationship of ***E*** and $\nabla \boldsymbol{T}$ gives us various advantage for a utilization in various thermoelectric applications such energy generation and heat flux sensor. However, the development of magnetic materials showing much higher thermopower of ANE (beyond ~10μV/K) is required. Recently we have studied ANE in magnetic Heusler alloys (such as $Co_2MnAl_{1-x}Si_x$ and $Co_2MnGa_{1-x}Ge_x$) and Fe-based simple binary alloys, and found large thermopower of ANE originating from their intrinsic electronic structure, i.e, Berry curvature and fine Fermi level tuning. We have also demonstrated a heat flux sensing using the prototype of flexible heat flux sensor. Future prospect of ANE-based applications will be introduced in this Webinar.

If interested to attend then please visit https://www.niser.ac.in/w2s-seminar/index.php