

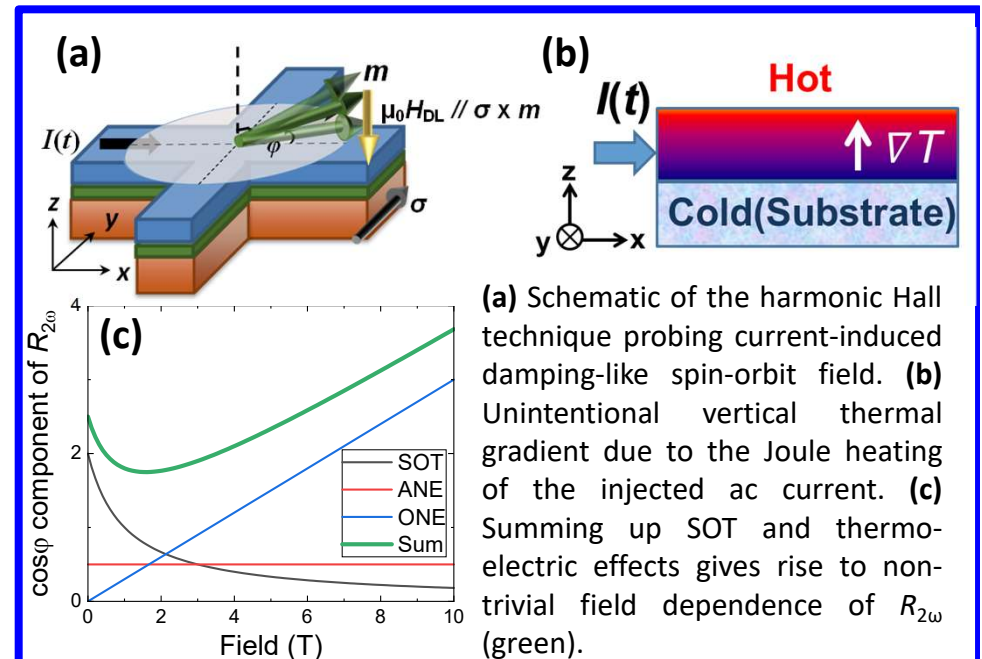
## 研究プロジェクト名: Investigating magneto-thermoelectric effects in heterostructures using harmonic voltage measurement

**概要:** Harmonic voltage measurement is a well-established technique for quantifying current-induced spin-orbit torques (SOTs) in thin film heterostructures. Magneto-thermoelectric effects (e.g. anomalous Nernst effect, ordinary Nernst effect, etc.) can however give rise to a signal that interferes with SOT quantification. Current model suggests the magneto-thermoelectric contribution may be separated from that of SOT, via their distinct field and angular dependence.

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### 期待される研究成果:

- Establish an experimental setup allowing application of a vertical thermal gradient to a thin film sample and measure the thermoelectric signal in the film plane
- Compare the measured signal with the thermoelectric contribution extracted from the harmonic Hall
- Stress-testing the model

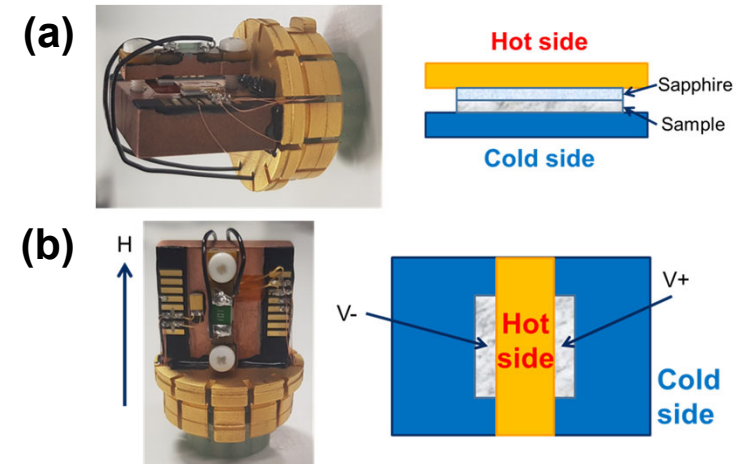


## 研究プロジェクト名: Investigating magneto-thermoelectric effects in heterostructures using harmonic voltage measurement

**概要:** We intentionally applied a vertical thermal gradient to a thin film sample and electrically measured its magneto-thermoelectric responses. Results were compared with that extracted from the harmonic voltage measurement.

### 研究成果(実施状況):

- A sample holder was designed and realized to perform the measurement in the PPMS
- BiSb/CoFeB bilayer shows significantly stronger magneto-thermoelectric signal than the conventional heavy metal/CoFeB
- Our preliminary results suggest thermal effects may not fully explain the measured second harmonic Hall offset in these bilayer systems



Images and illustrations of the sample “puck” for the magneto-thermoelectric measurement while applying a vertical temperature gradient. (a) and (b) show the side and top view, respectively.

**主要発表論文等:** Lau et al., in preparation