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## The significantly distinct performance of thermoelectric $AMg_2Sb_2$ ( $A = Ca, Sr, Sm, Yb, \text{ and } Mg$ )

*Saturday 18 February 2023 14:30 (15 minutes)*

$AM_2X_2$  ( $A$  = alkaline earth metals or divalent lanthanides;  $M$  = divalent transition metals or  $Mg$ ;  $X$  = nitrogen group elements) can represent a number of high-temperature superconductors and decent thermoelectric materials. One major mystery brought to our attention in thermoelectric  $AM_2X_2$  compounds is the significantly distinct thermoelectric figures of merit ( $zT$ ) of  $AMg_2Sb_2$  materials that can vary orders of magnitude with different  $A$  elements, which is in sharp contrast to the very similar  $zT$  values of both their  $AZn_2Sb_2$  and  $AMg_2Bi_2$  pristine counterparts. In this talk, I will discuss the determining factor for such a huge discrepancy of  $AMg_2Sb_2$  in thermoelectric performance. Time permitting, some other intriguing phenomena regarding their carrier and phonon transport will also be briefly introduced.

### Academic year

4th year

### Research Advisor

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