



**Showcasing research from the group of Prof. Hong Zhang
at Sichuan University, China**

**Ideal two-dimensional quantum spin Hall insulators
 MgA_2Te_4 ($A = \text{Ga}, \text{In}$) with Rashba spin splitting and
tunable properties**

This work investigates the MgA_2Te_4 ($A = \text{Ga}, \text{In}$) family of two-dimensional quantum spin Hall insulators based on the in-depth first-principles calculations. With the inversion asymmetry, the Rashba spin splitting emerges and the two different types (Rashba-like and Dirac-type) of edge states along (010) occur for MgGaInTe_4 . The bandgap and topological states can be modulated from the nontrivial to the trivial state by the electric field. The MgA_2Te_4 ($A = \text{Ga}, \text{In}$) family has an outstanding potential to apply for the topological quantum field-effect transistors.

As featured in:



See Hong Zhang *et al.*,
Phys. Chem. Chem. Phys.,
2024, **26**, 3815.