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# Electronic properties of hybrid organic and inorganic perovskites

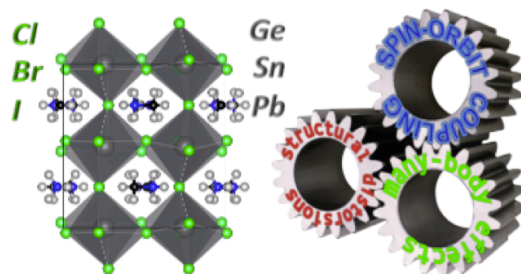
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In this poster we, first, present ABINIT based DFT results of the optoelectronic properties of  $\text{CH}_3\text{NH}_3\text{PbI}_3$  and  $\text{CH}_3\text{NH}_3\text{BCl}_3$  (B=Pb, Sn, Ge) hybrid organic-inorganic perovskites (HOP). For  $\text{CH}_3\text{NH}_3\text{MCl}_3$  HOP, the pseudocubic high temperature reference HOP structure (Pm-3m) was used to compare spin-orbit coupling (SOC) induced effect due to the metal atom B.<sup>[1-3]</sup>

Next, we present 2D layered HOP, which received a renewed interest in recent years due to increased stability under lighting conditions and resistance to humidity and moisture. Their electronic properties show their potential in photovoltaic and optoelectronic applications.<sup>[4]</sup>



[1] J. Even, L. Pedesseau, J.-M. Jancu, C. Katan, *J. Phys. Chem. Lett.* 4, 2013

[2] C. Katan, L. Pedesseau, M. Kepenekian, A. Rolland, J. Even, *J. Mat. Chem. A*, 3, 2015

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[4] J. Even, L. Pedesseau, M.A. Dupertuis, J.-M Jancu, C. Katan, *PRB*, 86, 2012

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