**Versatile physical properties in new two-dimensional van der Waals materials composed of group IV-V elements**

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Using first-principles calculations, we introduce layered IV-V compounds as novel 2D vdW material group with versatile physical properties. Our predicted IV-V compounds are in the form of A2B2, where A and B are elements in group IV (C, Si, Ge, Sn) and group V (N, P, As, Sb, Bi), forming the similar crystal structure as those of layered III-VI compounds, such as GaSe or InSe. We revealed that these newly proposed IV-V compounds have two stable distinct phases, one with the mirror symmetry and the other with the inversion symmetry. To explore their physical properties, we evaluate their phonon dispersion relations; electronic band structure; electrical and thermal transport properties; and estimate activation barrier of the phase transitions. Furthermore, we discovered the local Rashba spin splitting and topological non-trivial properties found in some of our structures containing heavy elements.