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Intergrowth of two layered buliding blocks to search for possible superconductivity[1] JINKE BAO, ALEXANDER RETTIE, Materials Science Division, Argonne National Laboratory, HAIJIE CHEN, Department of Chemistry, Northwestern University, DUCK YOUNG CHUNG, Materials Science Division, Argonne National Laboratory, MERCOURI G. KANATZIDIS, Department of Chemistry, Northwestern University Materials Science Division, Argonne National Laboratory — Layered compounds are promising platforms to realize novel superconductivity, exemplified by spin-triplet one in Sr_2RuO_4 and high-temperature one in cuprates and iron pnictides. Additionally, reduced dimensionality is conducive to the formation of spin- or charge-density wave order. Considering the similar phase diagrams observed in several different superconductors, it is rational to search for superconductivity by tuning an ordered phase in a layered system. $LaTe_3$ has a quasi-two dimensional structure comprising a square lattice of Te and exhibiting charge-density wave order well above room temperature. Superconductivity can be realized in the Te-square lattice by tuning its electronic structure. We try intergrowing $LaTe_3$ with other superconducting or magnetic layers to search for novel superconductivity. However, most of the cases are not successful due to lattice mismatch or chemical incompatibility between the two layers. We will present the structure and basic physical properties of the successful one with a quaternary composition K-La-Mn-Te.

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