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Synthesis, Structure, Physical Properties of several Zirconium Chalcogenides XIYU ZHU, BING LV, LIANGZI DENG, FENG YAN WEI, YANYI SUN, YUYI XUE, PAUL CHING-WU CHU, Texas Center for Superconductivity, University of Houston, Houston TX 77204-5002, USA — Compounds of KxZr2Se6, RbxZr2Se6 and ZrTe1.3As0.7 have been fabricated by high temperature solid state synthesis technique. All these compounds have the same space group Immm. They can be generally considered as the compounds derived from ZrSe3 and ZrTe3, which accommodate the quasi 2D type structure composed by (Zr2Se2)(Se4) and (Zr2Te2)(Te4) Layers. KxZr2Se6 and RbxZr2Se6 could be considered as the anionic layers [(Zr2Se2)(Se4)]x- intercalated with alkali cations. One the other hand, ZrTe1.3As0.7 isn't a layered compound. The compound has the same structure with NbPS, with disordered As and Te occupying the P sites. This structure could be considered as a derivative structure of ZrTe3 with the retained (Zr2Te2) layers interspersed with linear (Te0.3As0.7) chains. We also measured the magnetic and transport properties of these samples. We shall present and discuss their interesting structural and physical properties.

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