The new ternary intermetallic compound \( \text{Sr}_{14}\text{[Al}_4\text{]}_2\text{[Ge]}_3 \) was synthesized from stoichiometric ratios of the elements. The crystal structure (trigonal, space group \( \text{R}\overline{3}, a = 1196.58(2), c = 4010.33(7) \text{ pm}, Z = 6, R1 = 0.0574 \)) was determined using single crystal X-ray data. The structure contains two crystallographically independent tetrahedral \([\text{Al}_4]\) anions with Al-Al distances in the range from 269.7 to 273.6 pm. Taking into account the Zintl concept and the isosteric analogy to white phosphorus, their formal charge is \(-8\). Both of these tetrahedra are surrounded by 16 Sr cations. The three isolated \(\text{Ge}^{4-}\) anions per formula unit (isosteric to the noble gases) are coordinated by nine Sr cations. According to the ionic description \( \text{Sr}_{14}\text{[Al}_4\text{]}_2\text{[Ge]}_3 \leftrightarrow 14\text{Sr}^{2+} + 2[\text{Al}_4]^{8-} + 3[\text{Ge}]^{4-} \) the title compound is an electron-precise Zintl phase. This interpretation is supported by the results of a FP-LAPW band structure calculation, which show a distinct minimum of the total density of states at the Fermi level. Attempts to synthesize the analogous compounds in the systems Sr-Ga-Ge and Ca-Ga-Ge resulted in the formation of new members of the \( \text{Ca}_{11}\text{Ga}_7 \) structure type family. In the case of Ca-Al-Ge only the stable binary border compounds \( \text{Ca}_2\text{Ge} \) and \( \text{CaAl}_2 \) were formed in respective experiments.

**Key words:** Aluminium, Germanium, Zintl Phases, Band Structure Calculation