The development of transition metal oxides with perovskite-based structure has stimulated the search for mixed anion systems such as oxynitrides, oxyhalides and oxysulfides because incorporation of two different anions in one structure offers further opportunity to effectively induce chemical and physical properties that the pure oxides cannot possess. Such mixed anion phases, however, are difficult to be synthesized by a conventional high-temperature reaction. In this study, we have employed a high pressure technique to overcome this issue, and successfully synthesized a series of new layered oxhalide compounds. We present structural and magnetic properties of high-valent nickel oxyhalides Sr2NiO3X (X = F, Cl), and square-planar coordinated oxychlorides Sr2MO2Cl2 (Mn, Ni) and Ba2PdO2Cl2, isostructural with superconducting parent compound Ca2CuO2Cl2.


Keywords: perovskite, mixed anion, high pressure