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High Pressure Behavior in Hydrated Metal Hexafluorosilicates M(H2O)6SiF6 ALICE ACATRINEI, MONIKA HARTL, LUKE DAEMEN, JIANZHONG ZHANG, Los Alamos National Laboratory, LANSCE-LC, YUSHENG ZHAO, Los Alamos National Laboratory — The octahedral (6-fold) coordination is highly unusual in Si chemistry, making hexafluorosilicates (HFS) interesting from a structural standpoint. It has been observed that Si coordinates to O octahedrally at extremely high pressures deep in the Earth mantle, but no compound possessing this property is known to be thermodynamically stable at ambient conditions. We suggest that HFS could act as surrogate materials to study Si in this coordination state in hydrated materials. Transition metal HFS exhibit a variety of structural transitions and magnetic properties changes when pressure is applied. Some structural phases and phase transitions exhibited by some compounds at ambient pressure can occur in other compounds at high pressure only. We examined the behavior of Zn(II) as well as Cd(II) and Hg(II) HFS hexahydrates as a function of pressure and temperature, and their possible role in understanding structural phase transitions in HFS. Measurements were performed between 0-18 GPa at room temperature.

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