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**High-pressure synthesis and characterizations of the R2Pt2O7 pyrochlores.**[1] YUNQI CAI, QI CUI, JINGUANG CHENG, Chinese academy of science, ZHILING DUN, HAIDONG ZHOU, University of Tennessee, Knoxville, JIE MA, C. DELA CRUZ, JIAQIANG YAN, Oak Ridge National Laboratory, XIANG LI, JIANSHI ZHOU, University of Texas at Austin — Pyrochlore R2B2O7 where R3+ stands for rear-earth ion and B4+ for a nonmagnetic cation such as Sn4+or Ti4+consist of an important family of geometrically frustrated magnets, which have been the focus of extensive investigations over last decades. To further enlarge the R2B2O7, we have chosen to stabilize the Pt-based cubic pyrochlores under HPHT conditions for two reasons: (1) Pt4+ is in a low-spin state which ionic radius is located in between Ti4+ (0.605 ) and Sn4+ (0.69), and (2) Pt4+ has a spatially much more extended 5d orbitals and thus enhanced Pt 5d-O 2p hybridizations that might modify the local anisotropic exchange interactions. Such an effect has never been taken into account in the previous studies. In this work, we will present the detailed characterizations on the pyrochlores R2Pt2O7 obtained under HPHT conditions.

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