

## Structure of LiYbSe<sub>2</sub> and Magnetism in a Pyrochlore Lattice

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A new member of the Alkali metal rare-earth dichalcogenides, LiYbSe<sub>2</sub> was discovered and different from quantum spin-liquid candidate NaYbSe<sub>2</sub> hosting a perfect triangular lattice of Yb<sup>3+</sup>, LiYbSe<sub>2</sub> was found to crystalize in the cubic structure with space group Fd-3m (No. 227). Furthermore, the Yb<sup>3+</sup> ions in the structure arrange into a pyrochlore sublattice. The LiYbSe<sub>2</sub> crystals of ~1 mm size was grown using LiCl flux. The magnetic measurements indicate dominant antiferromagnetic interactions in the material with  $\theta_{CW} \sim -8$  K while the specific heat measurements revealed the absence of a long-range magnetic ordering down to 70 mK. Thermodynamic data analysis implies that LiYbSe<sub>2</sub> is a possible ideal spin liquid candidate due to its high frustration parameter and will be an interesting material to understand exotic magnetic effects due to the geometric frustration inherent to pyrochlore sublattice of Yb<sup>3+</sup>.