



Contribution ID: 248

Type: **Plenary talk**

Novel luminescence materials

Thursday, 10 December 2020 11:00 (30 minutes)

While the cation chemistry in many materials has been extensively studied, in the field of mixed anion compounds a lot remains to be discovered yet. Especially mixed-anionic hydrides are receiving a lot of attention at the moment, because the partial substitution can significantly change the physical and chemical properties [1]. Due to the low scattering power of hydride, the combined use of neutron and X-ray diffraction is essential for a complete structural characterization.

Beside the use of these tools, also the use of local probes can be helpful. For instance, rare earth metal ions showing 5d-4f transitions can show very sensitive differences in the polarizabilities in the local environment. Recently, a number of new mixed-anionic hydrides and complex hydrides has been discovered. Here, mixed hydride halides and borohydrides are studied. Furthermore, the first representative of a novel class of materials, the borate hydride $\text{Sr}_5(\text{BO}_3)_3\text{H}:\text{Eu}^{2+}$ is presented. The successful incorporation of hydride in the later compound was shown using a number of independent methods, including neutron powder diffraction, ^1H solid state MAS NMR, vibrational spectroscopy and quantum chemical calculations.

Beamtime at the SPODI, Research Neutron Source Heinz Maier-Leibnitz (FRM II) and the D2b, Institute Laue-Langevin is gratefully acknowledged.

[1] Y. Kobayashi, T. Yoshihiro, H. Kageyama, *Ann. Rev. Mater. Res.* 2018, 48, 11.1.

Primary author: KUNKEL, Nathalie

Presenter: KUNKEL, Nathalie

Session Classification: DN2020: Plenary talks

Track Classification: DN: Plenary talks