

ENERGYPOLIS SEMINAR

02. 12. 2015, 10:00 - 11:00, ENERGYPOLIS Sion, 4th floor, Seminar room Emosson

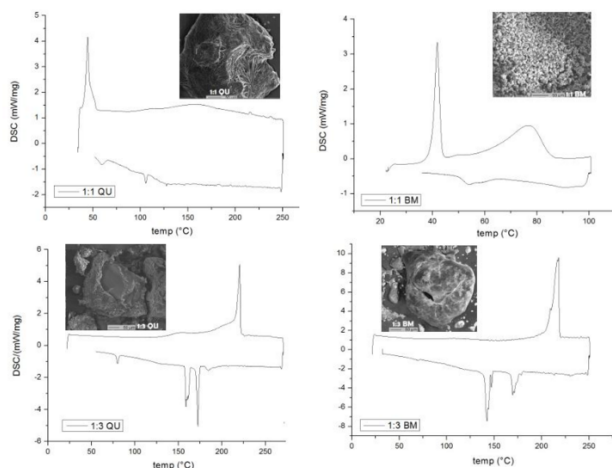
Synthesis Approach Influence on Morphology and Conductivity in $(\text{LiBH}_4)_{1-x}(\text{LiNH}_2)_x$

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The motivation of this talk is to understand the relationship between Lithium diffusion in grain boundary and conductivity of $\text{LiBH}_4\text{-LiNH}_2$ ionic conductors. For the combinations of LiNH_2 with other compounds in phase diagram, it seems that grain boundary area and grain size play an important role in conductivity. Studied material is combination of $(\text{LiNH}_2)_x(\text{LiBH}_4)_{1-x}$, where $x = 0.50$ ($\text{Li}_2\text{BH}_4\text{NH}_2$) and 0.75 ($\text{Li}_4\text{BH}_4(\text{NH}_2)_3$) synthesized by different methods (QU-quenching and BM-ball milling), so that they will have different grain sizes. Theoretically, QU has greatest grain size so lowest grain boundary and BM has lowest grain size with largest grain boundary.



SEM and TEM characterization measurements are performed in order to have some overview conclusions about grain size as well as XRD patterns to calculate grain size by Bragg's law. System will be investigated by the electrochemical study (voltammogram with different scan rates) for each sample to have information about diffusion of Li^+ . Furthermore, conductivity measurements of the materials will be executed for comparison.

References

- [1] C. Wang, S. Wang, Y.-B. He, L. Tang, C. Han, C. Yang, M. Wagemaker, B. Li, Q.-H. Yang, J.-K. Kim and F. Kang *Chem. Mater.* **2015**, *27*, 5647–5656
- [2] Y. Zhou, M. Matsuo, Y. Miura, H. Takamura, H. Maekawa, A. Remhof, A. Borgschulte, A. Züttel, T. Otomo and S. Orimo *Materials Transactions*, Vol. 52, No. 4 (2011) pp. 654 to 657



Short CV

Born in Kielce, Poland, 31/03/1989. Graduated from AGH University of Science and Technology in Krakow, Poland. Faculty of Materials Science and Ceramics, Discipline Chemical Technology, Specialization Technology of Building Materials. Currently PhD student in ECOSTORE ITN Project "Novel Complex Metal Hydrides for Efficient and Compact Storage Renewable Energy as Hydrogen and Electricity" as an Early Stage Researcher at the University of Turin, Italy. Internships: September 2013 - February 2014, Graz/Austria at the TU GRAZ; field: electrochemistry. October 2012 – December 2012, Caparica/Portugal in CENIMAT; field: transistors.