**MgH₂ as anode in Li-ion batteries**

Priscilla Huen, Torben R. Jensen and Dorthe B. Ravnsvæk

Interdisciplinary Nanoscience Center (iNANO) and Department of Chemistry, Aarhus University, Langelandsgade 140, 8000 Aarhus C, Denmark

Department of Physics, Chemistry and Pharmacy, University of Southern Denmark, Campusvej 55, 5230 Odense M, Denmark

In order to develop further the application of Li-ion batteries for electric vehicles and electrical grid system, metal hydride-based materials have been suggested as promising anode materials.

**Why MgH₂?**

- High theoretical capacity (5 times higher than graphite)
- Low polarization
- Relatively low cost

**BUT**

- Unsatisfactory cyclic stability

---

**Formation of LiMg alloy reduces the available amount of Mg for the charging reaction.**

**2. Mg has larger crystallite size with increasing Li content, and leads to a smaller interface area for the conversion reaction.**

**3. Change in conductivity shows that LiH has a small influence on the electronic transfer for the conversion reaction.**

---

**Conclusions**

1. Formation of LiMg alloy reduces the available amount of Mg for the charging reaction.
2. Mg has larger crystallite size with increasing Li content, and leads to a smaller interface area for the conversion reaction.
3. Change in conductivity shows that LiH has a small influence on the electronic transfer for the conversion reaction.

---

**Acknowledgement**

Assistant of Prof. Orimo’s group from Tohoku University for the differential conductance measurement is gratefully acknowledged. The research leading to these results has received funding from the People Program (Marie Curie Actions) of the European Union’s Seventh Framework Program FP7/2007-2013/ under REA grant agreement n° 607040 (Marie Curie ITN ECOSTORE www.ecostore-itn.eu).