

Poster Presentation

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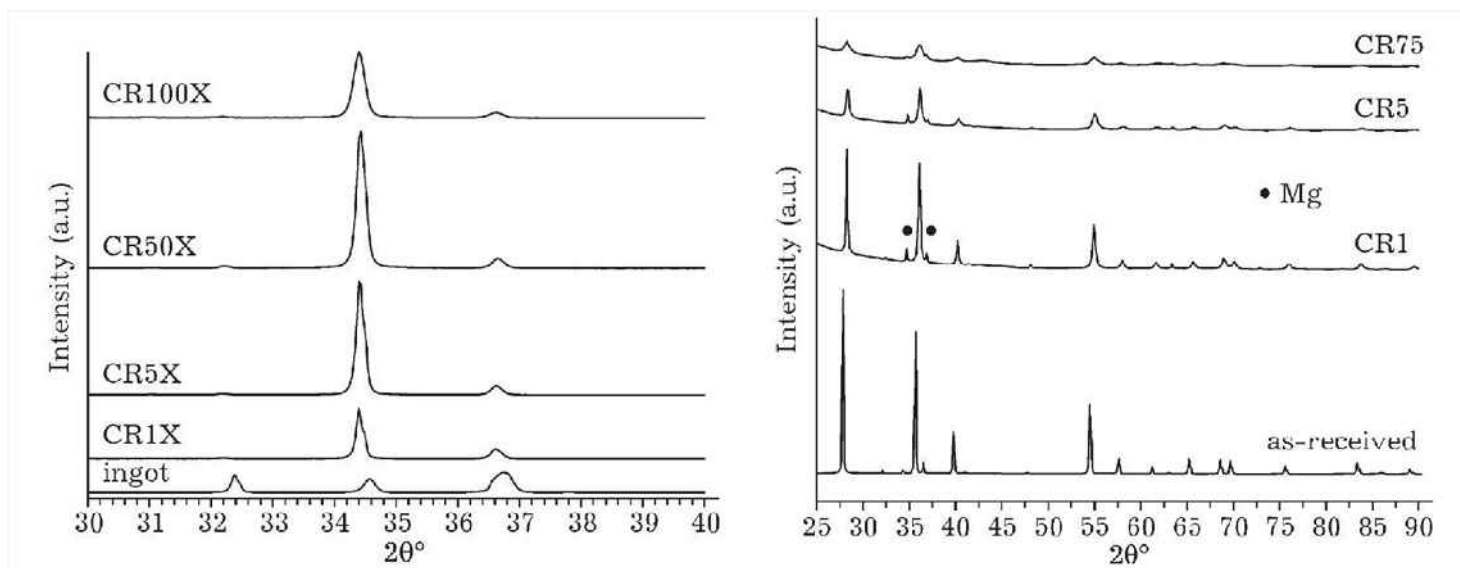
The effect of cold rolling on the crystal structure of Mg and MgH₂

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Hydrogen could have a leading role as an energy carrier in the future. As a storage medium, metal hydrides are interesting from a fundamental as well as practical point of view. Hydrogen storage applications have been the main driving force of research on these materials but lately uses such as thermal storage are considered. Magnesium and magnesium alloys are interesting as a hydrogen storage material since they are low cost and have a high gravimetric capacity (7.6 wt. %). As a preparation technique, cold rolling has been recently shown to be an equivalent to high energy ball milling for magnesium hydride [1]. In this presentation we will review the use of x-ray and neutron diffraction to study the effect of cold rolling on magnesium and magnesium hydride's crystal structure. Cold rolling on magnesium plate produced a highly textured material. When performed on magnesium hydride, cold rolling reduced the crystallite size down to nanometer scale. The impact of texture and naocrystallinity on hydrogen storage behaviours will also be discussed.

[1] Lang et Huot, A new approach to the processing of metal hydrides, *Journal of Alloys and Compounds*, 2011. 509 L18-L22



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