# Experimental report

12/09/2016

**Proposal:** DIR-139 **Council:** 10/2014

**Title:** Local dynamics and vibrational states in hybrin H 1 D methylammonium lead iodide perovskite MA+PbI3

**Research area:** Materials

**This proposal is a new proposal**


**Main proposer:** David DJURADO

**Experimental team:** Mathilde BOUCHARD

**Local contacts:** Bernhard FRICK


**Samples:** CH3NH3)PbI3

| Instrument | Requested days | Allocated days | From | To |
|---|---|---|---|---|
| IN16B | 2 | 2 | 30/07/2015 | 01/08/2015 |

**Abstract:**

EXPERIMENT n°DIR139

Instrument involved : IN16B : from 30/07 to 01 /0 /2015

Title: Local dynamics and vibrational states in hybrid H & D methylammonium lead iodide perovskite MA+PbI3-

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As mentioned in the experimental report of the experiment 7-04-140, we have seen some excitations at 2K possibly revealing some proton tunneling in CH3NH3PbI3 and in its partially deuterated analog…

The aim of this experiment was first to check the reality of this measurement because we thought also about the possibility to obtain such signal from the solvent which was used for the synthesis namely trichloro-methylene…

Unfortunately our doubts were quite justified because after submitting the powder samples to an annealing at 165°C for 30 min, we did not find anymore the appearance of these excitations at 2K….

We took profit anyway of this additional time to check if this solvent elimination had some influence of the results of EFWS and IFWS already obtained at the last experiment and we could check it was not the case.

Also, we did some quasi-elastic measurements at different temperatures with the chlorine containing sample we studied on IN5. Once again as we have verified the very bad stability of this sample, the obtained results during this run are for the moment not evaluated as reliable enough to be fully analyzed.

Finally, this run allowed us also to perform IFWS with different energy intervals namely 8µeV and 10 µeV. In particular we scanned the temperature range corresponding the orthorhombic / tetragonal transition at 160K.