

New promising solar cell material

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In this thesis a connection between structure and light properties of the semi-conducting material perovskites has been made. Perovskites has been predicted to play a very important role in future high efficient devices, however there are still obstacles that needs to be overcome in order for that to happen.

A new rising star material has proven to be a very promising supplement in the production of future high efficient solar cell devices. Due to properties that allows for current generation for a broad band of solar light among with low device production costs, the research community of *perovskite solar cell devices* has expanded greatly in just a few years. Since the first perovskite solar cell device in 2006 with an efficiency of 3.8 %, the efficiency has increased rapidly to reach 22.1% in 2016.

information revealing how perovskites react when exposed to light and how this is connected to the structure of the samples. The results helped revealed the mechanism behind the degradation of perovskites when exposed to low intensity light under a longer time period and also how irregular perovskite surface structure seemed to mean more losses for a further perovskite solar devices.

In order to make perovskite a future material in commercial devices, further investigation of its properties and physical mechanism is needed. Studies are preformed by research groups all over the world in order to look for ways to overcome the remaining obstacles of the material. My thesis work has been one contribution of understanding degradation of MAPBI₃ and that irregular structure can be very determining for the photophysical performance.

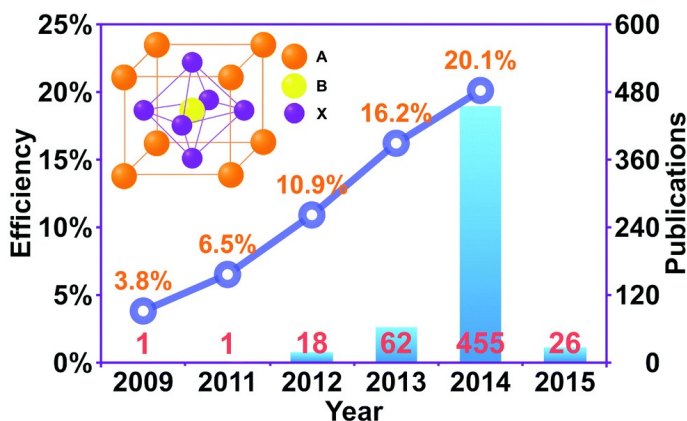


Figure 1: Picture source pubs.rsc.org

There are though some drawbacks that needs to be overcome and understood in order to make the perovskite market bloom. This project is one of many trying to obtain better knowledge of different physical phenomena in perovskites looking at reaction with light and structure.

Experiments in this work was performed on self-synthesized samples of MAPbI₃ perovskites to obtain