# Article information:

Reversible Hydration of CH3NH3PbI3 in Films, Single Crystals, and Solar Cells | Chemistry of Materials  
<https://pubs.acs.org/doi/abs/10.1021/acs.chemmater.5b00660>

# Article summary:

1. Methylammonium lead iodide perovskite (MAPI) solar cells are sensitive to moisture.

2. Hydrated crystal phases of MAPI can be formed and reversed when exposed to water vapor at room temperature, but liquid water causes irreversible decomposition of MAPI.

3. Hysteresis in the current-voltage characteristics of MAPI solar cells increases after dehydration, possibly due to changes in defect density and morphology following recrystallization from the hydrate.

# Article rating:

Appears moderately imbalanced: The article provides some useful information, but is missing several important points or pieces of evidence that would be required to present the discussed topics in a balanced and reliable way. You are encouraged to seek a more balanced perspective on the presented issues by exploring the provided research topics and looking at different information sources.

# Article analysis:

该文章提供了关于甲基铵铅碘钙钛矿（MAPI）太阳能电池对水分敏感性的新见解。然而，该文章存在一些潜在的偏见和片面报道。

首先，该文章只探讨了水蒸气和液态水对MAPI的影响，但没有考虑其他可能的环境因素，如温度、光照等。这可能导致对MAPI稳定性的评估不够全面。

其次，该文章声称MAPI在受到水蒸气作用时会发生可逆的相变，并且这种相变可以通过干燥来完全逆转。然而，该文章并没有提供足够的证据来支持这一主张。例如，它没有详细描述如何确定样品已经完全干燥，并且没有提供任何实验证据来证明相变是可逆的。

此外，该文章还声称MAPI在受到水蒸气作用时会发生从深棕色到透明的颜色变化，并且确定了单晶体中CH3NH3PbI3·H2O的光学常数。然而，在实际应用中，MAPI通常是以薄膜形式使用，并且该文章并没有提供关于薄膜中CH3NH3PbI3·H2O光学常数的详细描述。这可能导致在实际应用中对MAPI薄膜的稳定性评估不够准确。

最后，该文章没有探讨MAPI与其他材料（如电极、封装材料等）之间的相互作用，也没有考虑到可能的环境风险和安全问题。这可能导致对MAPI在实际应用中的可靠性和稳定性评估不够全面。

总之，该文章提供了关于MAPI太阳能电池对水分敏感性的新见解，但存在一些潜在的偏见和片面报道。未来研究需要更加全面地考虑各种环境因素，并提供更多实验证据来支持其主张。

# Topics for further research:

* Other environmental factors affecting MAPI stability
* Evidence supporting the reversible phase transition of MAPI
* Optical constants of CH3NH3PbI3·H2O in MAPI thin films
* Interactions between MAPI and other materials
* Environmental risks and safety concerns of MAPI
* Need for more comprehensive evaluation of MAPI reliability and stability in practical applications

# Report location:

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