# Article information:

Orientated crystallization of FA-based perovskite via hydrogen-bonded polymer network for efficient and stable solar cells | Nature Communications
<https://www.nature.com/articles/s41467-023-36224-6>

# Article summary:

1. Formamidinium lead iodide (FAPbI3) based perovskite solar cells (PSCs) have achieved a record power-conversion efficiency (PCE) of 25.7%.

2. A strategy to improve the stability of α-FAPbI3 is introducing additives into the pure-FAPbI3 such as volatile salt, pseudo-anions, and cations.

3. A multifunctional fluorinated molecule 3-fluoro-4-methoxy-4’,4”-bis((4-vinyl benzyl ether) methyl)) triphenylamine (FTPA) was designed to promote orientated crystallization of FA0.95MA0.05Pb(I0.95Br0.05)3 perovskite and form high quality and stable films with ordered crystal orientation and low defect density for efficient and stable solar cells.

# Article rating:

Appears well balanced: The article presents the information in a reliable and balanced way, without biases and prejudices. The claims made in the article are well supported and, where applicable, all sides of the argument are given opportunity to present their point of view. The article appears trustworthy and reliable.

# Article analysis:

The article “Orientated crystallization of FA-based perovskite via hydrogen-bonded polymer network for efficient and stable solar cells” published in Nature Communications provides an overview of the strategies used to improve the stability of FAPbI3 based perovskite solar cells (PSCs). The authors present a novel approach using a multifunctional fluorinated molecule 3-fluoro-4-methoxy-4’,4” bis((4 vinyl benzyl ether) methyl)) triphenylamine (FTPA), which is designed to promote orientated crystallization of FA0.95MA0.05Pb(I0.95Br0.05)3 perovskite and form high quality and stable films with ordered crystal orientation and low defect density for efficient and stable solar cells.

The article is generally reliable in its presentation of the research findings, however there are some potential biases that should be noted when considering its trustworthiness and reliability. Firstly, the article does not provide any evidence or discussion on possible risks associated with using FTPA as an additive in FAPbI3 based PSCs, such as potential toxicity or environmental impacts that may arise from its use in this application. Secondly, while the authors discuss various strategies used to improve the stability of FAPbI3 based PSCs, they do not explore any counterarguments or alternative approaches that could be taken instead of using FTPA as an additive in this application; this could potentially limit their conclusions about the effectiveness of FTPA as an additive in this context. Finally, while the authors provide evidence for their claims regarding FTPA's ability to promote orientated crystallization of FA0.95MA0

# Topics for further research:

* Alternative approaches to improving FAPbI3 based PSCs stability
* Potential risks associated with using FTPA as an additive
* Environmental impacts of FTPA in FAPbI3 based PSCs
* Counterarguments to using FTPA as an additive
* Advantages of orientated crystallization of FA0.95MA0.05Pb(I0.95Br0.05)3 perovskite
* Comparative studies of FTPA and other additives for FAPbI3 based PSCs

# Report location:

<https://www.fullpicture.app/item/723876afd11a875f973787dde68f6eaa>