# Article information:

Molecular Engineering for Two-Dimensional Perovskites with Photovoltaic Efficiency Exceeding 18% - ScienceDirect  
<https://www.sciencedirect.com/science/article/pii/S2590238520306287>

# Article summary:

1. A strategy has been proposed to modify crystallization and quantum-confined behaviors in Ruddlesden-Popper 2D perovskites (n = 4) via the van der Waals interaction between spacer cations of different chain lengths.

2. With the optimal amylamine (AA) spacer, high-quality 2D perovskites featuring well-aligned phase alignments with fewer unfavorable n-value species and a reduced exciton binding energy have been realized, leading to sufficient charge transfers through different n-value components.

3. The devices based on (AA)2MA3Pb4I13 yield a champion PCE of 18.42%, showing an impressive open-circuit voltage of 1.25 V and a fill factor exceeding 0.80.

# Article rating:

May be slightly imbalanced: The article presents the information in a generally reliable way, but there are minor points of consideration that could be explored further or claims that are not fully backed by appropriate evidence. Some perspectives may also be omitted, and you are encouraged to use the research topics section to explore the topic further.

# Article analysis:

The article is generally reliable and trustworthy, as it provides detailed information about the molecular engineering for two-dimensional perovskites with photovoltaic efficiency exceeding 18%. The article is well written and provides clear explanations of the concepts discussed, as well as evidence to support its claims. The authors provide detailed descriptions of their experiments and results, which are supported by figures and tables that help illustrate their points.

However, there are some potential biases in the article that should be noted. For example, the authors focus mainly on how their proposed strategy can improve photovoltaic efficiency in 2DRP-PSCs without exploring other possible strategies or approaches that could be used to achieve similar results. Additionally, while the authors discuss how their proposed strategy can improve material stability in ambient environment, they do not explore any potential risks associated with using this approach or any possible negative impacts it may have on device performance or longevity.

In conclusion, this article is generally reliable and trustworthy but does contain some potential biases that should be taken into consideration when evaluating its content.

# Topics for further research:

* Alternative strategies for improving photovoltaic efficiency in 2DRP-PSCs
* Potential risks associated with molecular engineering for 2DRP-PSCs
* Impact of molecular engineering on device performance and longevity
* Advantages and disadvantages of molecular engineering for 2DRP-PSCs
* Recent advances in molecular engineering for 2DRP-PSCs
* Comparative analysis of different strategies for improving photovoltaic efficiency in 2DRP-PSCs

# Report location:

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