# Article information:

Electronic metal–support interaction modulates single-atom platinum catalysis for hydrogen evolution reaction | Nature Communications  
<https://www.nature.com/articles/s41467-021-23306-6>

# Article summary:

1. Hydrogen is a promising green fuel, and electrocatalytic hydrogen evolution reaction (HER) using noble metals like Pt is the most efficient method for catalyzing the conversion of H3O and H+2O to H2.

2. Electronic metal-support interaction (EMSI) can modulate the electronic structure of metal catalysts and improve their catalytic activities by strengthening the adsorption of reaction intermediates and lowering energy barriers.

3. Single-atom metal catalysts (SAMCs) provide an ideal model system for studying EMSI effects on catalytic reactions due to their well-defined active sites and homogeneous atomic coordination environment.

# 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:

该文章是一篇关于单原子铂催化剂在氢发生反应中的电子金属-支撑相互作用调控的研究。文章介绍了氢作为一种绿色可持续能源的重要性，并探讨了使用可再生电力进行电催化氢发生反应的前景。文章指出，贵金属（如铂、钯和铑）是目前最有效的催化剂材料，但需要通过合理设计和可控合成催化剂来实现高效利用。

然而，该文章存在一些潜在偏见和不足之处。首先，文章没有提及其他可能的催化剂材料或方法，使得读者可能会认为贵金属是唯一可行的选择。其次，文章没有深入探讨贵金属对环境和人类健康可能造成的风险，例如挖掘和加工过程中产生的污染物以及废弃物处理问题。此外，文章也没有平等地呈现双方观点或考虑到其他潜在影响因素。

此外，在介绍单原子金属催化剂时，文章强调了其优点，并将其描述为理想且简化的模型系统。然而，在实际应用中，单原子金属催化剂的稳定性和可持续性仍然存在挑战，并且需要更多的研究来解决这些问题。因此，文章可能存在一定程度的宣传内容和偏袒。

总之，该文章提供了有关单原子铂催化剂在氢发生反应中电子金属-支撑相互作用调控方面的有价值信息，但也存在一些潜在偏见和不足之处。读者应该保持批判性思维并考虑其他可能的影响因素。

# Topics for further research:

* Alternative catalyst materials/methods
* Environmental and health risks of precious metals
* Other perspectives and potential impact factors
* Challenges of stability and sustainability of single-atom metal catalysts
* Potential bias and promotion
* Critical thinking and consideration of other factors

# Report location:

<https://www.fullpicture.app/item/a30fed60480791b8f1bf60d191a59d2e>