

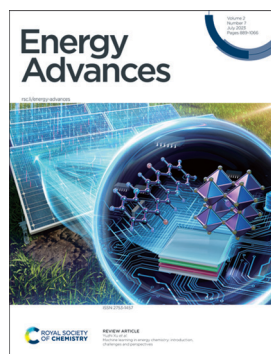
# Energy Advances

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## IN THIS ISSUE

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### Inside cover

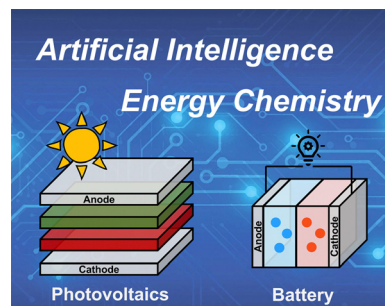
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A special thanks is dedicated to Steffen Schwichow for the artwork design.

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### Machine learning in energy chemistry: introduction, challenges and perspectives

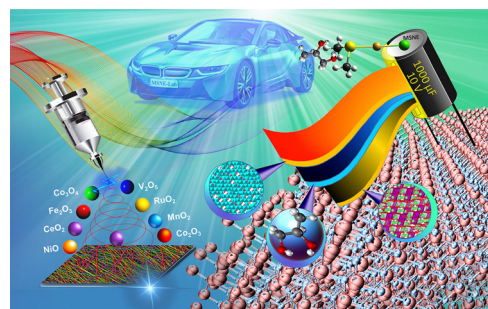
Yuzhi Xu, Jiankai Ge\* and Cheng-Wei Ju\*



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Abhilash Pullanchiyodan, Roshny Joy, Pranav Sreeram, Leya Rose Raphael, Akhila Das, Neethu T. M. Balakrishnan, Jou-Hyon Ahn, Alexandru Vlad, Sivaramapanicker Sreejith\* and Prasanth Raghavan\*



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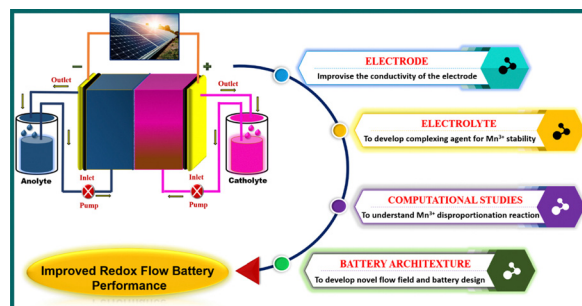


## REVIEWS

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## Energy storage mechanism, advancement, challenges, and perspectives on vivid manganese redox couples

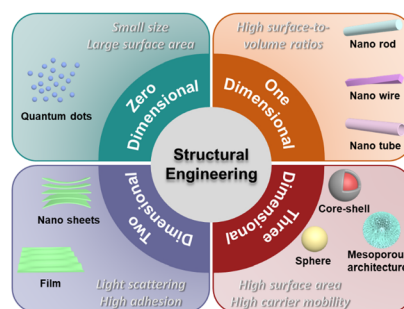
R. Naresh, Vilas G. Pot\* and P. Ragupathy\*



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## Nanostructured TiO<sub>2</sub> for improving the solar-to-hydrogen conversion efficiency

Cong Wang and Mohamed Nawfal Ghazzal\*

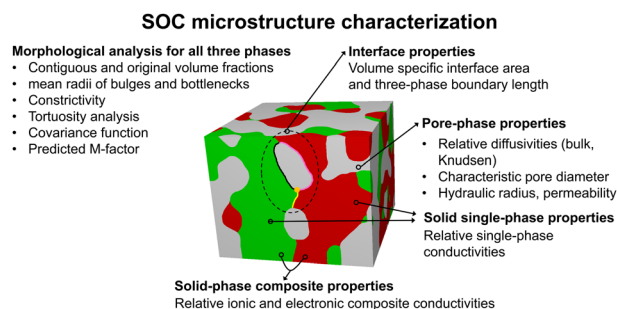


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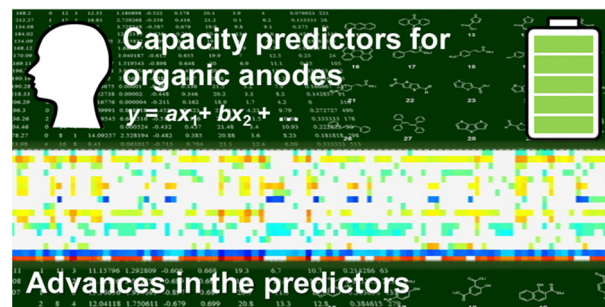
Philip Marmet\*, Lorenz Holzer, Thomas Hocker, Gernot K. Boiger, Holger Bausinger, Andreas Mai, Mathias Fingerle, Sarah Reeb, Dominik Michel and Joseph M. Brader



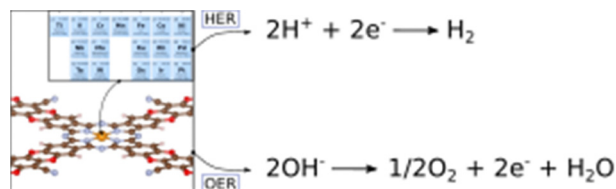
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Haruka Tobita, Yuki Namiuchi, Takumi Komura, Hiroaki Imai, Koki Obinata, Masato Okada, Yasuhiko Igarashi\* and Yuya Oaki\*



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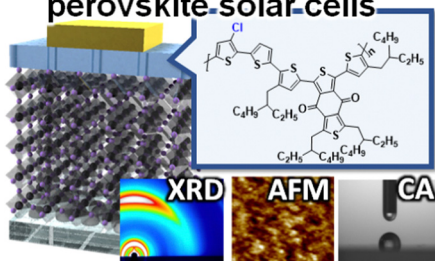


### Hydrogen and oxygen evolution reactions on single atom catalysts stabilized by a covalent organic framework

Ilaria Barlocco, Giovanni Di Liberto\* and Gianfranco Pacchioni

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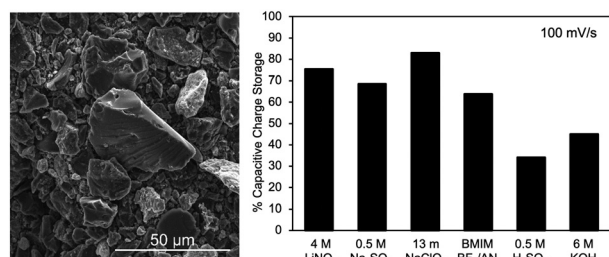
### Dopant-free HTM of perovskite solar cells



### A chlorinated polythiophene-based polymer as a dopant-free hole transport material in perovskite solar cells

Kakaraparthi Kranthiraja, Ryosuke Nishikubo and Akinori Saeki\*

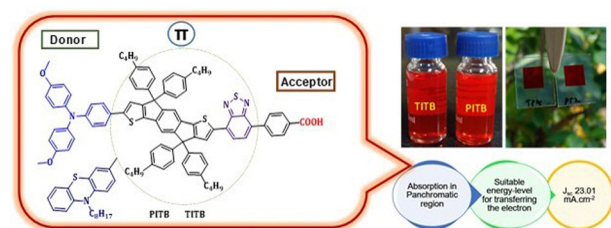
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