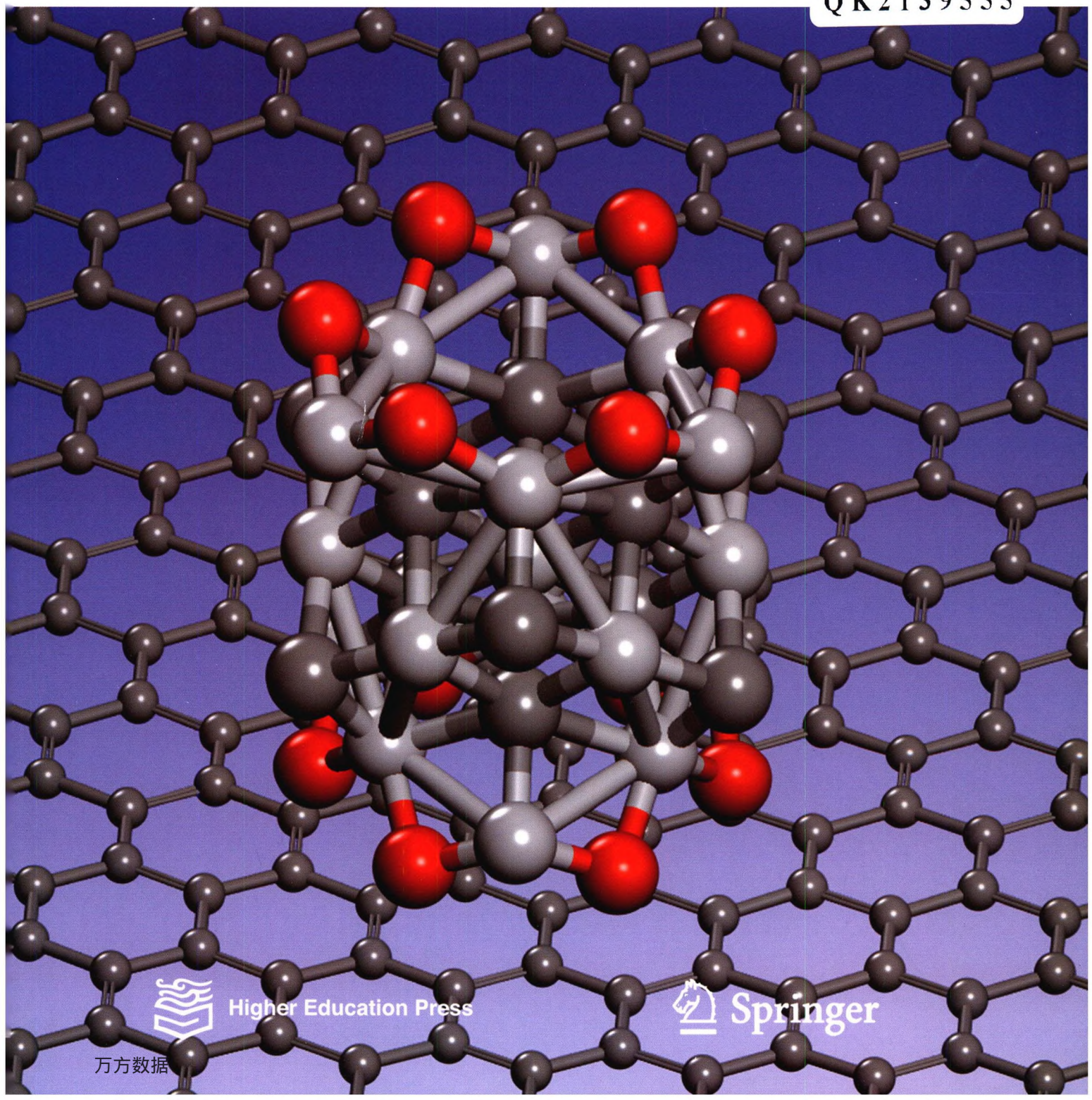


# Frontiers of Physics

ISSN 2095-0462  
Volume 16 · Number 5  
October 2021  
物理学前沿



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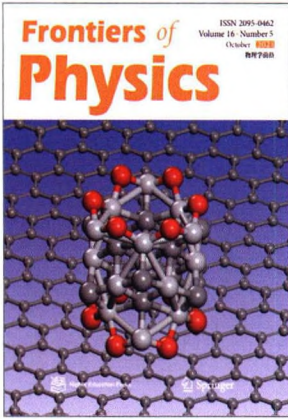


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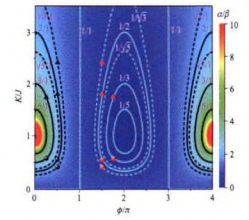
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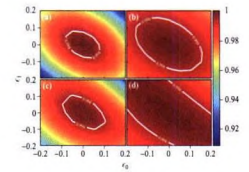
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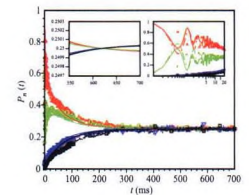
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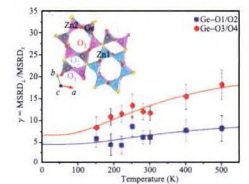
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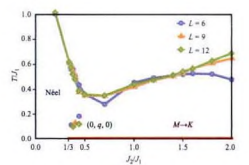
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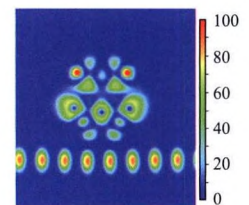
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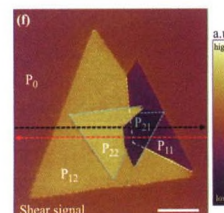


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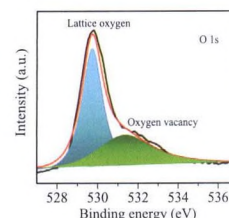
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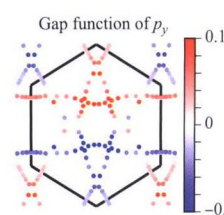
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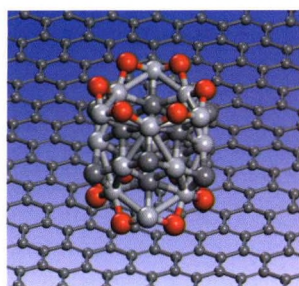
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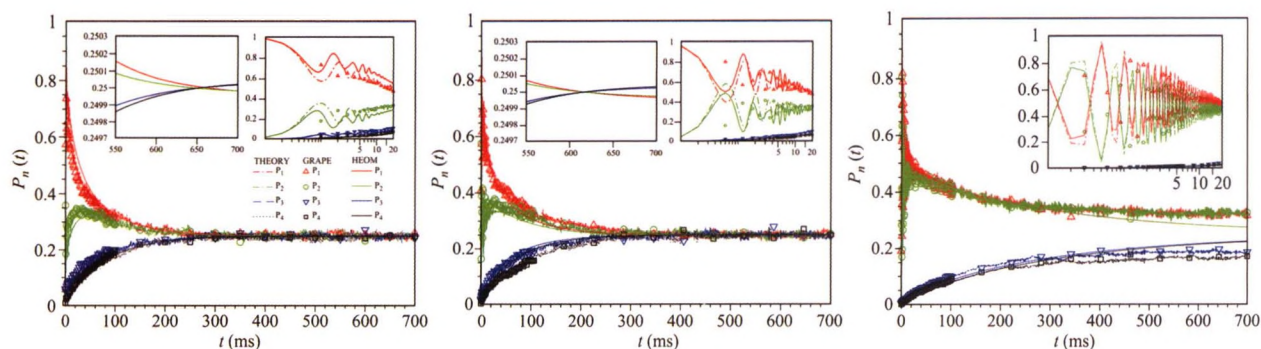


## Cover

Nanostructures have been designed using basic blocks with totally different dimensional, like MXene quantum dots (QDs) loaded on 2D nanosheets. QDs offer abundant active edging sites but suffer from severe aggregation if no constraint is applied. 2D presents large surface area, high conductivity and strong capacity to fix QDs. As a result, such heterojunction brings unique physics and promising catalysis for hydrogen production. For more details, please refer to the article entitled “A DFT study of Ti<sub>3</sub>C<sub>2</sub>O<sub>2</sub> MXenes quantum dots supported on single layer graphene: Electronic structure and hydrogen evolution performance” by Qingquan Kong, Xuguang An, Lin Huang, Xiaolian Wang, Wei Feng, Siyao Qiu, Qingyuan Wang, and Chenghua Sun, *Front. Phys.* 16(5), 53506 (2021). [Photo credit: Qingquan Kong at Chengdu University.]

# Frontiers of Physics

Vol. 16 No. 5 October 2021



Simulations of the energy transfer by the HEOM and GRAPE and quantum simulation. See: Na-Na Zhang, Ming-Jie Tao, Wan-Ting He, Xin-Yu Chen, Xiang-Yu Kong, Fu-Guo Deng, Neill Lambert, and Qing Ai, *Front. Phys.* 16(5), 51501 (2021).

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物理学前沿  
CN 11-5994/O4  
邮发代号: 80-965

ISSN 2095-0462

