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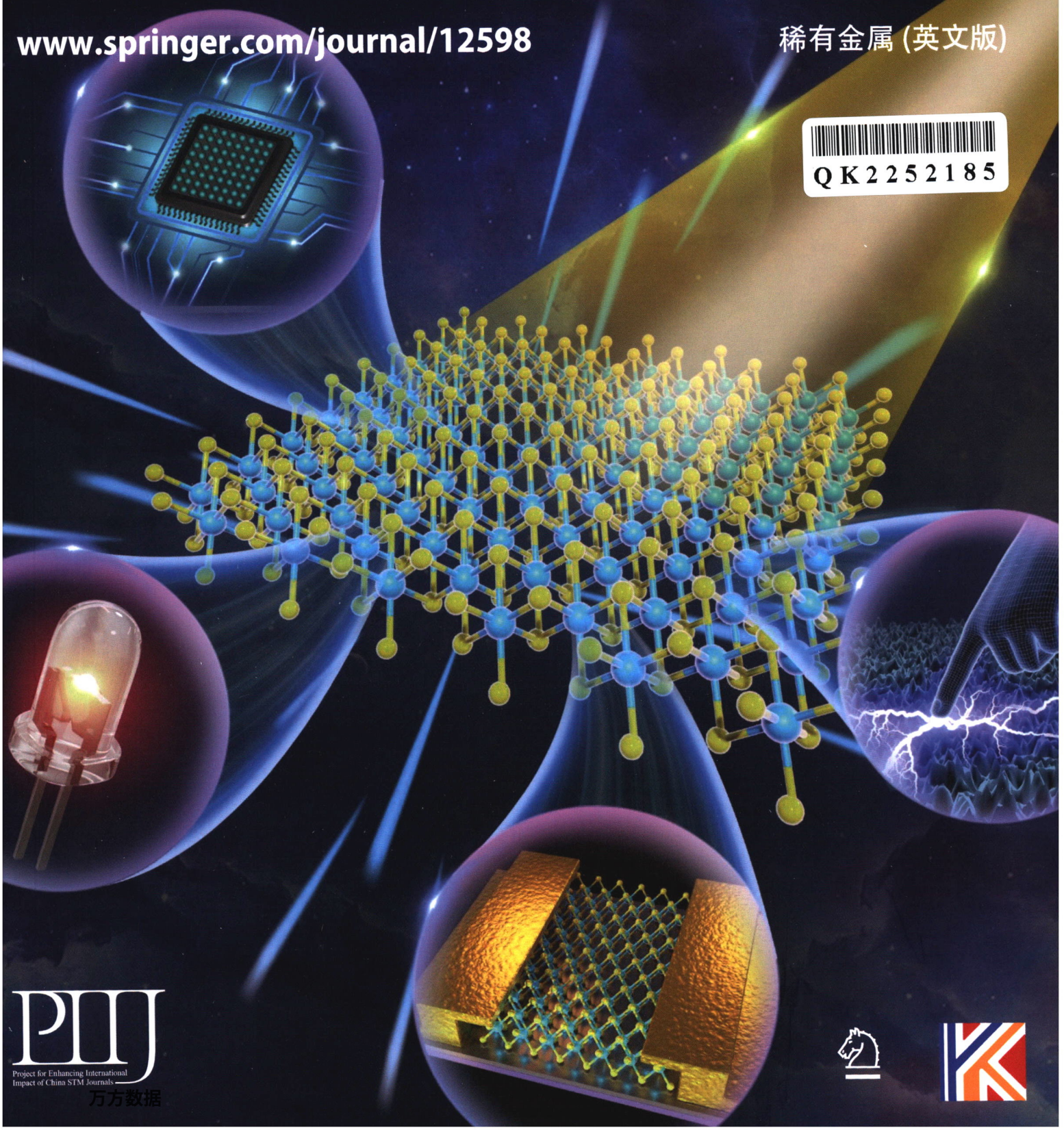

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Cover story

(Liang-Rui Zou, Dan-Dan Sang, Yu Yao, Xue-Ting Wang, Yuan-Yuan Zheng, Nai-Zhou Wang, Cong Wang, Qing-Lin Wang, pp. 17–38)

Research progress of optoelectronic devices based on two-dimensional MoS_2 materials

MoS_2 is a widely used as optoelectronic material with exceptional electrical, magnetic, optical, and mechanical properties. Owing to the quantum confinement effect, high absorption coefficient, high surface-volume ratio, and tunable bandgap, nano-MoS_2-based devices exhibit size-dependent and novel optoelectronic properties, such as excellent photoluminescence and high anisotropic electrical, mechanical, and thermal properties. This issue focuses mainly on the latest progress of optoelectronic device applications based on two-dimensional (2D) nano-MoS_2. Various advanced devices, such as sensors, photodetectors, light-emitting diodes, memory applications, and field-effect transistors are considered. This issue will provide a new perspective in promoting the development of 2D nanomaterial-based photoelectric applications. The possibility of creating MoS_2/diamond heterojunction devices is put forward, so as to further explore the development of 2D nano-material optoelectronic devices in complex environment.

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