

Exploring Quantum Size Effect of Antiferromagnetic 120° Néel State on Mn Nanoislands by Spin-Polarized Scanning Tunneling Microscopy

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The quantum size effect plays a crucial role in the fundamental physics as well as technological applications in the two-dimensional materials. In our studies, we have investigated the quantum size effect on the antiferromagnetic 120° Néel state of monolayer Mn on Ag(111) by utilizing spin-polarized scanning tunneling microscopy (SP-STM). The typical area sizes of Mn nanoislands under investigation are ranged from 30 to 170 nm². The interplay between the area size, modulation of Néel state and magnetic field dependence have been discussed as a manifestation of the quantum size effect.

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