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Magneto-Electronic Energy Spectra of Monolayer Tinene S. C. CHEN, Center for Micro/Nano Science and Technology, National Cheng Kung University, F. L. SHYU, Department of Physics, Chinese Military Academy, J. Y. WU, Department of Physics, National Cheng Kung University, C. W. CHIU, Department of Physics National Kaohsiung Normal University, C.H. LEE, Institute of Applied Physics, National Chengchi University, M. F. LIN, Department of Physics, National Cheng Kung University — The novel magnetic quantization in monolayer tinene, being closely related to the sp^3 bondings, spin-orbital coupling and magnetic field, is investigated by the generalized tight-binding model. The feature-rich two groups of low-lying LLs, which are, respectively, dominated by the $2p_z$ orbitals and ($2p_x$,$2p_y$) orbitals, are revealed near the Fermi level simultaneously. They are very different in the spatial distributions, state degeneracy, spin configurations and B_z-dependence. The B_z-dependent energy spectra might be approximated by the simple relationships. The splittings of LLs in the second groups are due the effects of magnetic fields. The unique magnetic-electronic properties in tinene are absent in graphene, silicene and germanene. The predicted magneto-electronic energy spectra could be directly verified by the STS measurements.

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