

Abstract Submitted
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Modifying Electronic and Magnetic Properties of BCN sheets by Boron Nitride Domain Size and Tensile Strain¹ CHUN TANG, CHANGFENG CHEN, Department of Physics and Astronomy and High Pressure Science and Engineering Center, University of Nevada, Las Vegas, NV 89154 — Recent experiments have successfully synthesized atomic thin BCN hybrid composites with controllable BN domain concentration. Using first principles calculations, we report the scaling law of electronic and magnetic properties of this novel structures with respect to BN domain size and geometry. We find due to the BN domain induced internal electric field, the magnetic moment can be effectively modified. External tensile strain engineering can also be applied as an efficient tool to modify the electronic and magnetic properties. Our results may have important applications in semiconducting devices.

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