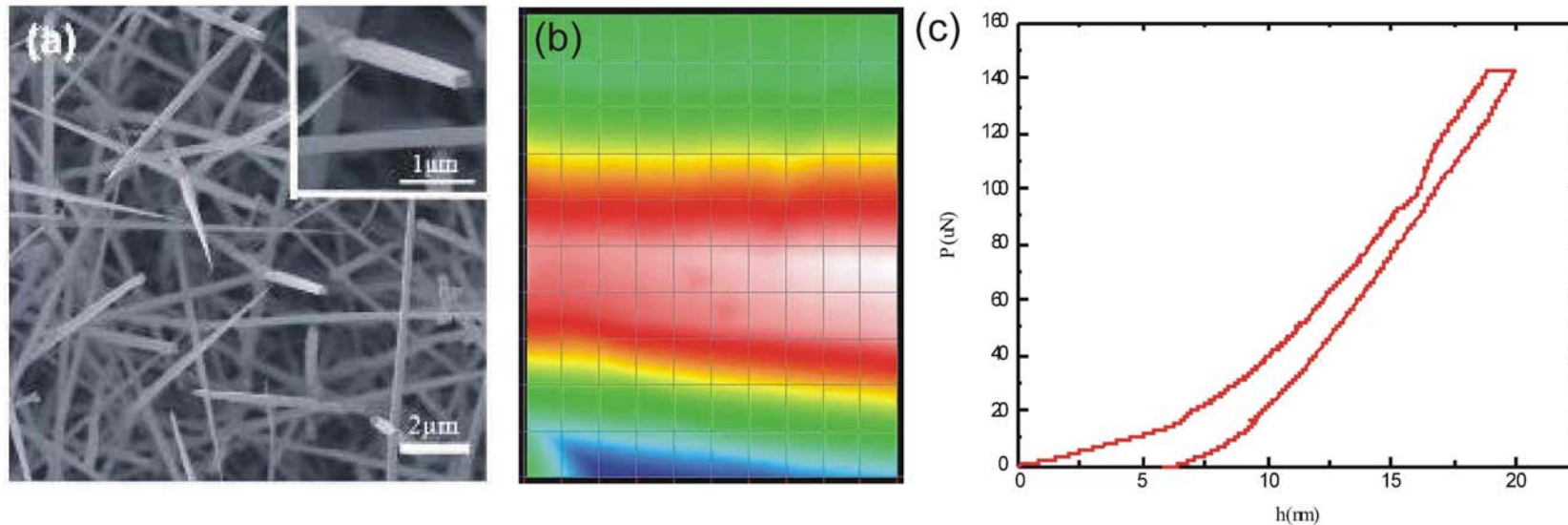


Novel Boron-based Nanomaterials for Thermoelectric Energy Conversion



Catalytic materials-assisted growth of MB_6 ($M=\text{Sr}, \text{Ba}$) 1D nanostructures was realized. The MB_6 1D nanostructures are appealing candidates for high temperature thermoelectric energy conversion. The growth mechanism of as-synthesized MB_6 nanostructures can be attributed to a non-traditional vapor-liquid-solid mechanism. Mechanical properties of individual nanostructures were studied by nanoindentation. Results show that the MB_6 nanostructures are several tens of nanometer in diameter and up to ten micrometer in length (Fig. a). Nanoindentation (Figs. b and c) revealed that the Young's modulus of BaB_6 1D nanostructures is around 200 GPa based on standard Oliver-Pharr method.