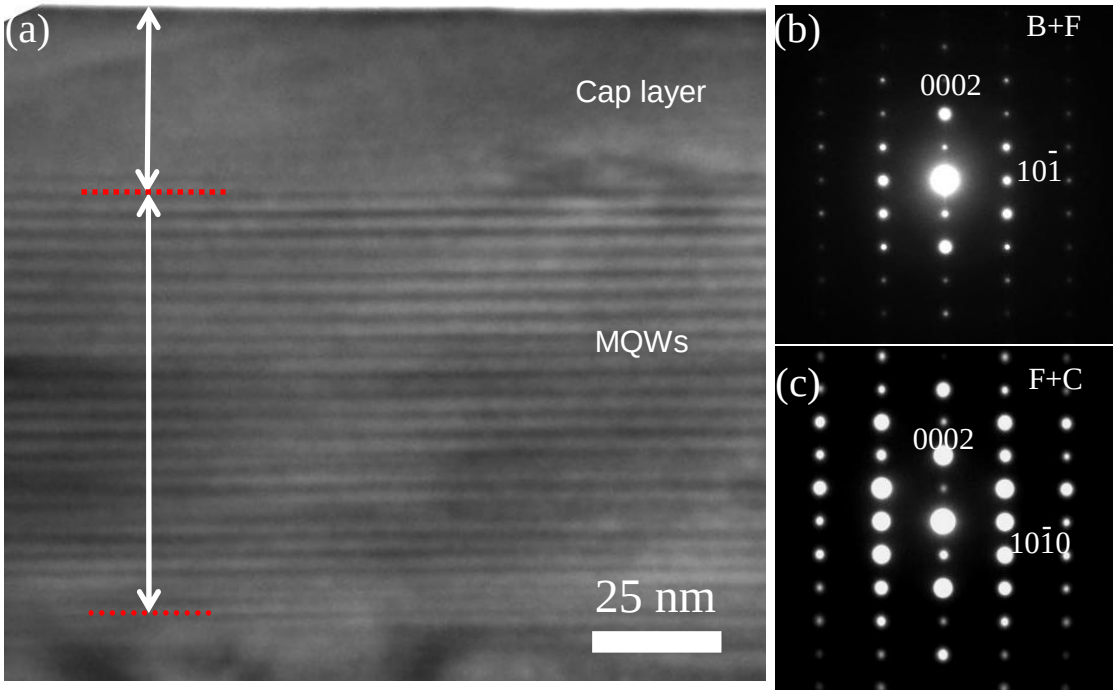
光电材料量子设计与应用

Quantum design and application of opto-electronic materials

以量子力学为基础，应用半导体超晶格理论对光电材料的几何结构进行了理论设计，并通过 MBE、MOCVD等多种方法制备了不同低维结构光电材料，研究了材料结构、界面、及存在缺陷对材料性能的影响，为制备高质量的光电信息材料和量子器件提供了理论指导。

Based on quantum mechanics and semiconductor superlattice theory, the opto-electronic material geometries were designed. And opto-electronic materials with different low dimension geometries were prepared through MBE and MOCVD techniques. Further, the influence of the material geometry, interface and defects on the material properties was studied, which provides theory guide for fabricating opto-electronic information material and quantum devices with high performance.



GaN/AlGaN MQWs 光电薄膜的透射电镜和反射高能电子衍射照片

TEM picture and RHEED patterns of GaN/AlGaN optoelectronic films with MQWs structure