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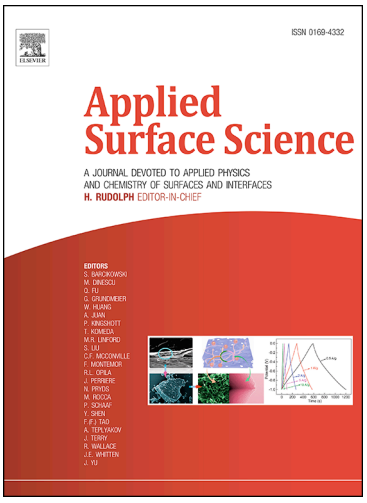

Full Length Article

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From Stannous Oxide to Stannic Oxide Epitaxial Films Grown by Pulsed Laser Deposition with a Metal Tin Target

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Abstract

Stannous oxide (SnO) and stannic oxide (SnO_2) are both important wide-band-gap semiconductors. To study the conductive mechanism in detail, high quality epitaxial films are essential. Here we propose a simple method to grow high quality epitaxial films of either stannous oxide or stannic oxide on an *r*-plane sapphire substrate by using pulsed laser deposition with a metallic tin target. The valence state of tin is controlled by tuning the oxygen pressure during the deposition procedure. Metal tin impurities and the transition phase of Sn_3O_4 are avoided and the growth windows from stannous oxide to stannic oxide are confirmed. For single-crystalline SnO epitaxial film, a rocking curve

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