

Abstract Submitted
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Dual-Surfactant effect on enhancing different p-type doping in GaP. JUNYI ZHU, GERALD STRINGFELLOW, FENG LIU, university of utah
— We report first principles calculations demonstrating a dual-surfactant effect of Sb and H on enhancing Zn, Mg, Be and Cd in vapor phase epitaxially grown GaP thin films. The combined effects of Sb and H lower significantly the doping energy all the p-type dopants in GaP, while neither Sb nor H can work alone as effectively. The role of H is to satisfy the electron counting rule. The role of Sb is to serve as an electron reservoir to help electron redistribution. The enhancement is the lowest for Mg which is probably due to the lowest electronegativity of Mg among these four elements.

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