ZnO: Perspective and Recent Advances

박윤수†
서울대학교 물리학과
(yoonsoopark@msn.com)

Recent surge of interest in ZnO is attributable to demonstration of p-type conductivity, which paves the way for many potential devices and applications such as light emitting diodes, lasers and detectors, in the blue and near UV wavelength regions, and solar cells and electronic devices. ZnO has attractive electronic, mechanical and thermal properties.
Among the most attractive properties of ZnO as a semiconductor are its bandgap, large exciton binding energy and a very efficient radiative recombination process. The bandgap of ZnO can be increased and decreased with addition of Mg or Be and Cd, respectively. However, it is difficult to obtain p-type conductivity as is the case for any large bandgap ionic crystal. Though p-type conductivity has been recently in ZnO by many researchers, efficient light emission based on the p-n homojunction junctions has not been yet reported. In this presentation perspectives and recent advances in ZnO will be discussed.