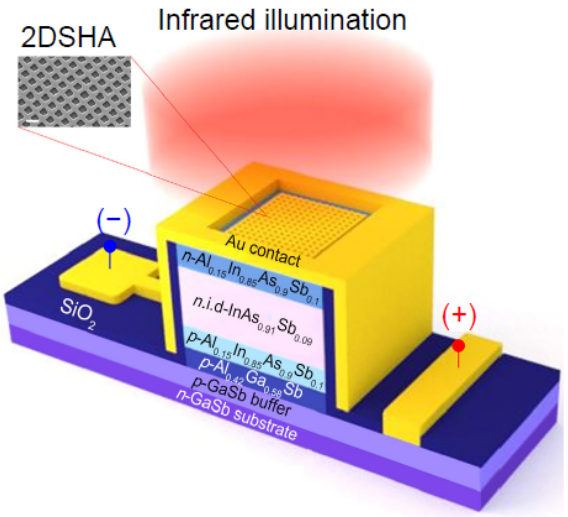
Opto-Electronic Advances
January 2019 Vol. 2 No. 1

Contents

Review

This review article introduces the recent development in surface plasmon enhanced infrared photodetection. The fundamentals of surface plasmon and photodetection are first introduced, followed by the mechanism of surface plasmon enhancement on the performance of a photodetector. Different plasmonic structures which can be used to integrate with photodetectors are then presented with the comparison in enhance mechanism, device performance, and operating spectrum range. Professor Dao Hua Zhang's research group then review different types of surface plasmon enhanced detectors which include heterostructure type, Schottky type, photoconductive type, low dimensional type (including quantum well and quantum dot types), thermal detector type, and other types. More attention is paid to our recent works, a two-dimensional metallic hole array enhanced InAsSb based heterostructure *n-i-p* photodiode and a single metallic array enhanced dual band GaSb/InAsSb heterostructure photodetector which show excellent performance at room temperature. Finally, some prospects and challenges in surface plasmon enhanced photodetection are briefly discussed.

Opto-Electronic Advances **2**, 180026 (2019)
DOI: 10.29026/oea.2019.180026



Opto-Electronic Advances
January 2019 Vol. 2 No. 1

Contents

Review

In view of the unique advantages of laser machining of transparent brittle materials, the research team of Professor Xiaozhu Xie of Guangdong University of Technology systematically reviewed the methods and applications of laser machining of transparent brittle materials. The main research methods of laser full cutting, laser scribing, laser stealth dicing, laser filament, laser induced backside dry etching (LIBDE), and laser induced backside wet etching (LIBWE) are introduced in this paper. The advantages and disadvantages of different laser machining methods are compared and summarized from different performances. Additionally, the applications of these techniques in micromachining, drilling and cutting, and patterning are reviewed in detail. Finally, the challenges faced by machining of transparent brittle materials and the development direction of future scientific research and practical application are summarized and prospected.

Opto-Electronic Advances **2**, 180017 (2019)
DOI: 10.29026/oea.2019.180017