

# Contents

<b>Preface</b>	<b>XI</b>
<b>Section 1</b> Quantum Devices	<b>1</b>
<b>Chapter 1</b> Principles and Applications of Nanoplasmonics in Biological and Chemical Sensing: A Review <i>by Parsoua A. Sohi and Mojtaba Kahrizi</i>	<b>3</b>
<b>Chapter 2</b> Graphene-Based Nanophotonic Devices <i>by Ankur Pandya, Vishal Sorathiya and Sunil Lavadiya</i>	<b>19</b>
<b>Section 2</b> Photonic Devices	<b>33</b>
<b>Chapter 3</b> Toward On-Demand Generation of Entangled Photon Pairs with a Quantum Dot <i>by Arash Ahmadi, Andreas Fognini and Michael E. Reimer</i>	<b>35</b>
<b>Chapter 4</b> Interactions of Positrons and Electrons with Hydrogenic Systems, Excitation, Resonances, and Photoabsorption in Two-Electron Systems <i>by Anand K. Bhatia</i>	<b>59</b>
<b>Chapter 5</b> Origin and Fundamentals of Perovskite Solar Cells <i>by Mohd Quasim Khan and Khursheed Ahmad</i>	<b>81</b>
<b>Section 3</b> Semiconductor Devices	<b>95</b>
<b>Chapter 6</b> Diffusion and Quantum Well Intermixing <i>by Thamer Tabbakh</i>	<b>97</b>

## **Chapter 7**

Development and Characterization of High-Quality HfO<sub>2</sub>/InGaAs  
MOS Interface

*by Sukeun Eom, Min-woo Kong and Kwang-seok Seo*

**115**

## **Chapter 8**

Surface-Enhanced Raman Scattering: Introduction and  
Applications

*by Samir Kumar, Prabhat Kumar, Anamika Das  
and Chandra Shakher Pathak*

**137**