

## TIGaN Quantum-Dot Photodetectors

© A.G. Al-Shatravi<sup>1</sup>, H. Hassan<sup>2</sup>, S.M. Abdulmuhsin<sup>1</sup>, A.H. Al-Khursan<sup>2,¶</sup>

<sup>1</sup> Physics Department, College of Science, University of Thi-Qar,  
Nassiriyah, Iraq

<sup>2</sup> Nassiriya Nanotechnology Research Laboratory (NNRL), College of Science, University of Thi-Qar,  
Nassiriyah, Iraq

¶ E-mail: ameen\_2all@yahoo.com

*Received September 28, 2020*

*Revised September 28, 2020*

*Accepted for publication November 3, 2020*

Due to the lack of work in structures containing thallium (Tl), this work is devoted to study of Ga<sub>8</sub>Tl<sub>2</sub>N quantum-dot photodetectors. Parameters are specified first. This structure is shown to have low absorption. Enough quantum efficiency is obtained. This detector works at 360–460 nm and peaked at 410 nm, which can be used in optical coherence tomography applications.

**Keywords:** quantum dot, thallium-based structures, quantum efficiency, absorption spectrum.

Full text of the paper will appear in journal SEMICONDUCTORS.