

Virtual Simulator

Prof. Shivani Mirase¹, Shreya Chalisgaokar², Avanti Joshi², Tithi Bhasme²

Cummins College of Engineering for Women, Nagpur, Maharashtra, India¹

Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur, Maharashtra, India²

shreya.chalisgaokar@cumminscollege.edu.in, avant.joshi@cumminscollege.edu.in,

tithi.bhasme@cumminscollege.edu.in

Abstract: *This paper is based on virtual experiment approaches to Gunn diode and their vi characteristics. Virtual labs which provide remote-access to simulation-based Labs in various disciplines of Science and Engineering. In microwave and radar engineering, virtual experiments are not available. In this paper, we consider vi characteristics of Gunn diode. In this experiment without actual use of power supply we performing experiment virtually. Evaluation using web technology we introduced this experiment. Gunn devices were simulated using the Sentauros Device software. The fabricated planar Gunn diodes are 1.3 μm long and 120 micron wide and the measured and simulated results are in excellent agreement. This experiment involving the changes in current and voltage. We further show applications and experiment actual and virtual setup.*

Keywords: Virtual Experiment

REFERENCES

- [1]. A. Khalid, N. J. Pilgrim, G. M. Dunn, M. C. Holland, C. R. Stanley, I.G. Thayne, and D. R. S. Cumming, "A planar Gunn diode operating above 100 GHz," IEEE Electron Device Lett., vol. 28, no. 7, pp. 849-851, Oct. 2007.
- [2]. C. Li, A. Khalid, S. H. Paluchowski Caldwell, M. C. Holland, G. M. Dunn, I. G. Thayne, and D. R. S. Cumming, "Design, fabrication and characterization of In_{0.23}Ga_{0.77}As-channel planar Gunn diodes for millimeter wave applications," Solid-State Electron., vol. 64, no.1, pp.67-72, Oct. 2011.
- [3]. A. Khalid, C. Li, V. Papageorgiou, G. M. Dunn, M. J. Steer, I. G. Thayne, M. Kuball, C. H. Oxley, M. Montes Bajo, A. Stephen, JGlover and D. R. S. Cumming, "In_{0.53}Ga_{0.47}As Planar Gunn Diodes Operating at a Fundamental Frequency of 164 GHz," IEEE Electron Device Lett., vol. 34, no. 1, pp. 39-41, Jan. 2013.
- [4]. W. Kowalsky and A. Schlachetzki, "InGaAs Gunn Oscillators," IET Electronics Letters, vol. 20, no.12, pp. 502-503, Jun. 1984.
- [5]. T. Tatsumi, "Geometry Optimization of Sub-100nm Node RF CMOS Utilizing Three Dimensional TCAD Simulation," in Proc. ESSDERC,2006, pp. 319-322.
- [6]. J. Copriady, "Teacher competency in the teaching and learning of chemistry practical," Mediterranean Journal of Social Sciences, vol 5, pp.312-318, 2014.
- [7]. G. Demircioğlu and M. Yadigaroglu, "The effect of laboratory method on high school students' understanding of the reaction rate," Western Anatolia Journal of Educational Sciences, Special Issue: Selected papers presented at WCNTSE, pp.509-516, 2011.
- [8]. C. Tüysüz, "The effect of the virtual laboratory on students' achievement and attitude in chemistry," International Online Journal of Educational Sciences, vol 2, pp.37-53, 2010.
- [9]. R. Md Zahidur, "Teaching electrical circuits using a virtual lab," In Transit: The LaGuardia Journal on Teaching and Learning, vol 6, pp.85-92, 2014.
- [10]. R.K. Scheckler, "Virtual labs: a substitute for traditional labs?" The International Journal of Developmental Biology, vol 47, pp.231-236, 2003.