

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE

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Report on “The Art of Learning Semiconductor Devices:

p-n Junctions, MOSFETs and memristors!”

Organised by Dept of ECE, 29th, June 2020



The poster features the title "THE ART OF LEARNING SEMICONDUCTOR DEVICES" in large blue letters, with the subtitle "p-n junctions, MOSFETs and memristors" in smaller red letters below it. The Madanapalle Institute of Technology & Science logo is in the top right corner. The speaker's name, "Dr. Rupam Goswami", and his affiliation, "Dept. of Electronics & Communication Engg. Tezpur University, Assam 784028, India", are listed. His email address, "E-mail: rupam21@tezu.ernet.in", is also provided. A small inset photo of Dr. Goswami is on the right. The text "Webinar on the art of learning semiconductor" is at the bottom left.

Submitted by: Dr. Shanidul Hoque and Dr. Sarwesh P
Sr. Assistant Professor, Dept. of ECE

ECE Department of Madanapalle Institute of Technology & Science, conducted a webinar on “**The Art of Learning Semiconductor Devices: *p-n Junctions, MOSFETs and memristors!***” on 29-06-2020. The Seminar was started by 10.30am. The resource person was: **Dr. Rupam Goswami, Assistant Professor, Department of Electronics and Communication Engineering, Tezpur University.** He has contributed many notable works in the domain of semiconductor devices like Tunnel FET, FinFET, and FeFET through reputed peer-reviewed journals such as *IEEE Transactions on Electron Devices, IEEE Transactions on Nanotechnology, IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control, and IEEE Sensors Journal*, apart from reputed journals published by Springer, Elsevier and Wiley. He has 30 publications in peer-reviewed international journals, conferences and book chapters, and has filed 2 patents. He is working on three research projects sponsored by Govt. of India.

The webinar has motivated the students towards discovering new ways of understanding devices in general through the various concepts discussed. At the end of the webinar, the students able to generate analogies for basic devices and looked at them through newer perspectives. Qualitative explanations and key concepts are addressed for the following topics:

- ❖ ***p-n Junctions***: basic concepts of Fermi Dirac Distribution, quasi-Fermi levels, drift and diffusion currents and philosophy of minority carrier currents.
- ❖ ***MOSFETs***: basic principle of operation, architecture and overview of short channel effects.
- ❖ ***Memristors***: principle of working, simple models and applications

Finally at 12:45pm, the seminar is ended with the vote of thanks which is addressed by Head of the Department, ECE, MITS, Madanapalle, India.

