Electrikus...

Issue 4

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As the chiefs say

From an initiative 3 years back to a tradition now, The e-newsletter has explored all limits of knowledge. I extend my heartfelt greetings to all participants, authors, faculty staff and students associated in this endeavor.

Er. DC Jain
Chairman
(Gyan Ganga Group)

It is a matter of great happiness to me to know that the students have continued the e-newsletter for such a long time with great efficiency. Each edition comes out better than the previous and I have similar hopes from this one.

Mr. Rajneet Jain
Secretary
(Gyan Ganga Group)

I am very pleased to know that our college team is coming out with another issue of the e-newsletter. I heartily congratulate the editorial team. We expect to put a lot of technical knowledge to the readers from this e-newsletter.

Mr. Pankaj Goyal
Executive Director
(Gyan Ganga Group)

This effort of the students will be surely appreciated by one and all. Along with academics, the different activities in college are the keys that will unlock the hidden talents and thoughts in students.

Mr. Apurva Singhai
Executive Director
(Gyan Ganga Group)

It is joyous to know that the students are continuing the legacy of the e-newsletter as it shall help in spreading the activities being conducted by the institute to the public. I wish the team good luck.

Dr. Maneesh Choubey
Group Director
(Gyan Ganga Group)

It gives me immense pleasure to know that another edition of Electrikus is coming out. I wish all the success to the team of the EC branch involved and hope that this edition will also benefit the students in a great manner.

Dr. RK Ranjan
Principal
GGITS, Jabalpur

I am confident that this e-newsletter will provide relevant data about technology and latest happenings around the globe to all the budding engineers of our college. My best wishes to the team for future prospects.

Prof P.K. Jain
Head(Examination Cell)
GGITS, Jabalpur

This new edition of Electrikus has loads of exciting updates. Technology and time never stop and the updates here keep account of the latest developements.My warm wishes to the Gyan Ganga Group for the publication of this e-newsletter.

Prof. Vinod Kapse
Head (EC Department)
GGITS, Jabalpur

With already the so many incredible issues previously, I congratulate the editors on handling the pressure well and coming out with yet another brilliant edition of Electrikus. We truly are "Committed for Excellence".

Prof. Pankaj Sahu
Faculty Co-ordinator

From the editors

Mitul Chakraborty - 5th Semester

in this new edition we have tried to experiment a bit hope people appreciate it. Happy Reading.

Abhishree Chowdhary - 3rd Semester

Appreciation is the best reward of Hard work. Hope that everybody likes the work and appreciates it.

IN THIS EDITION :

VISION

"To be centre of excellence in teaching-learning and employability in various fields of Electronics and Communication Engineering to produce globally competent, innovative and socially responsible citizen."

Mission

1. To offer high quality graduate and post graduate programs in Electronics and Communication with strong fundamental knowledge and to prepare students for professional career or higher studies.
2. To foster spirit of innovation and creativity among students, faculty and staff, promote environment of growth, participation in conferences, technical and community services and lifelong learning for all.
3. To discover and disseminate knowledge through learning, teaching, sharing, training, research, engagement and creative expression.

MOLETRONICS

As a scientific pursuit, the search for a viable successor to silicon computer technology has garnered considerable curiosity in the last decade. The latest idea, and one of the most intriguing, is known as molecular computers, or moletronics, in which single molecules serve as switches, "quantum wires" a few atoms thick serve as wiring, and the hardware is synthesized chemically from the bottom up.

The central thesis of moletronics is that almost any chemically stable structure that is not specifically disallowed by the laws of physics can in fact be built. The possibility of building things atom by atom was first introduced by Richard Feynman in 1959.

Moletronics is expected to touch almost every aspect of our lives, right down to the water we drink and the air we breathe. Experimental work has already resulted in the production of molecular tweezers, a carbon nanotube transistor, and logic gates. Theoretical work is progressing as well. James M. Tour of Rice University is working on the construction of a molecular computer. Researchers at Zyvex have proposed an Exponential Assembly Process that might improve the creation of assemblers and products, before they are even simulated in the lab. We have even seen researchers create an artificial muscle using nanotubes, which may have medical applications in the nearer term.

A major force responsible for these revolutionary developments has been the molecular electronics or ‘Moletronics’ Program organized by the US Government's Defense Advanced Research Projects Agency (DARPA). Previously, DARPA gave birth to the Internet in the 1970s and 1980s, revolutionizing the way the world communicates. Now, the agency is setting its sights on a new revolution in the nature, structure, and scale of the very materials with which the world both computes and builds. Ultimately, to compute with molecular-scale structures — i.e. nanometer-scale structures — one must learn how to characterize and organize them on similar scales, one by one and in vast arrays.

To understand what a giant step this would be beyond today's electronic computers, one needs to appreciate that a conventional commercial microcomputer chip still contains only about 10–50 million switches in a much larger area, the size of a large postage stamp. That is, Moletronics is planning for a computer with devices and circuitry as much as one million times denser than that in today's state-of-the-art commercial microcomputer. This would address concerns expressed in the electronics industry about the difficulties that may be encountered in the further miniaturization of conventional silicon semiconductor microelectronics

Especially exciting is the fact that second-order impacts of all this research already are appearing in important experiments being conducted outside the Moletronics Program, which are adopting its concepts, devices, and fabrication techniques. However, the Moletronics Program is committed to much more than promoting research. It is committed to building actual prototype molecular-scale electronic computing systems that will produce a quantum jump in the concept and the commerce of computation, thereby sowing the seeds for a revolution in materials science, as well as in electronic computation.

Developments underway in the laboratories of Moletronics' investigators soon will expand both the extent and the variety of these molecular-scale electronic circuits and integrate them into ultradense computer systems. These prototypes of future systems show promise of not just maintaining Moore's Law, but of breaking it.

Looking beyond present experiments, it is possible to envision a new materials technology that incorporates such nanoelectronics into the very fabric of all objects even before they are built. Eventually, the same techniques that are being developed primarily for the fabrication of nanostructured electronics are likely to be applied more broadly to revolutionize the manufacture and the properties of all materials.