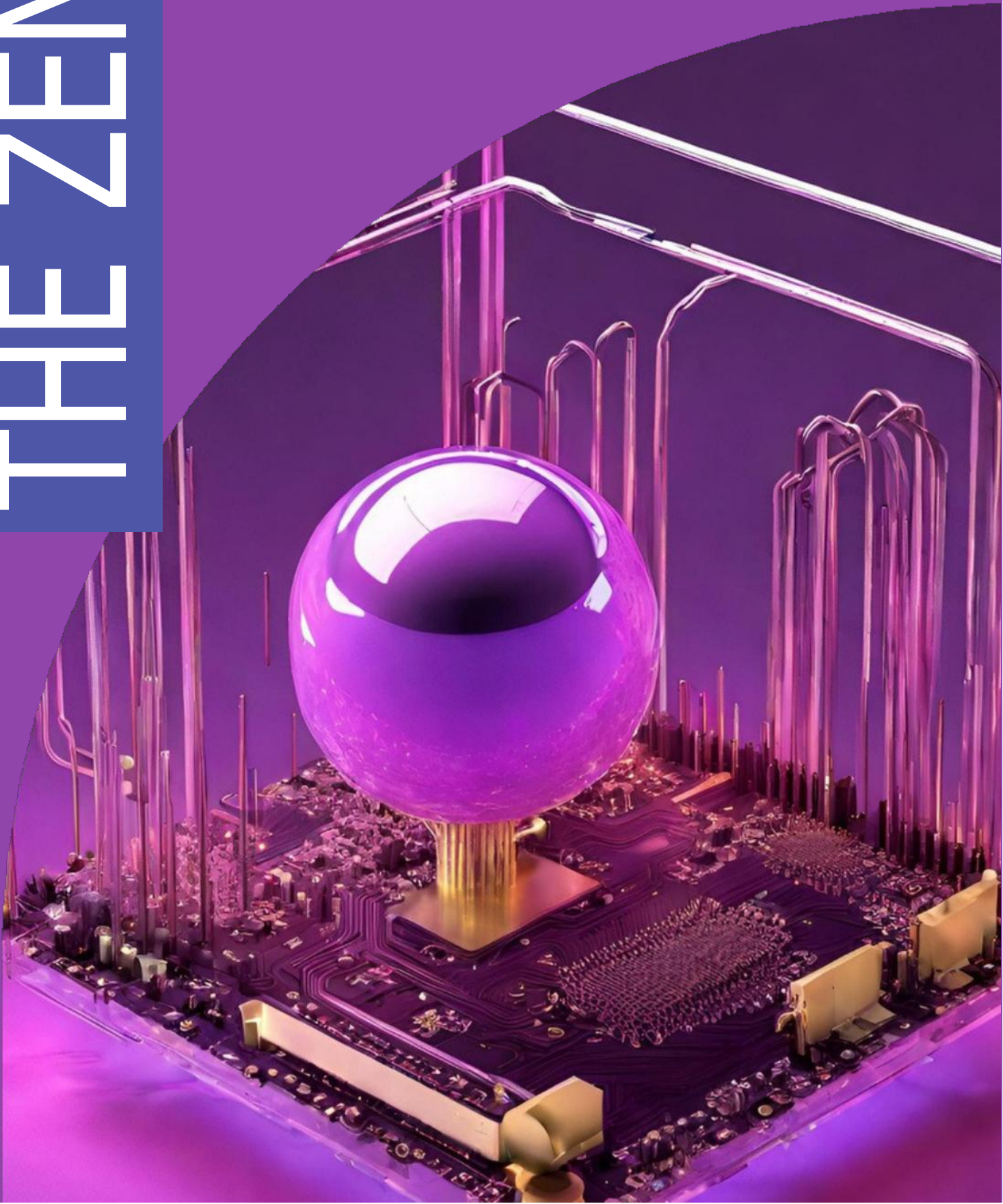


THE ZENITH

OCTOBER 2024

VOLUME 7: ISSUE 6



CONTENTS

01.	The silk thread that can turn clothes into charging stations	01
02.	Expert Lectures/Seminars/Courses Organised	03
03.	Achievements of Students/ Teachers/ staff	07

The silk thread that can turn clothes into charging stations

Imagine a sweater that powers electronics to monitor your health or charge your mobile phone while running. This development faces challenges because of the lack of materials that both conduct electricity stably and are well suited for textiles. Now a research group, led by Chalmers University of Technology in Sweden, presents an ordinary silk thread, coated with a conductive plastic material, that shows promising properties for turning textiles into electricity generators.

Thermoelectric textiles convert temperature differences, for example between our bodies and the surrounding air, into an electrical potential. This technology can be of great benefit in our everyday lives and in society. Connected to a sensor, the textiles can power these devices without the need for batteries. These sensors can be used to monitor our movements or measure our heartbeat.

Since the textiles must be worn close to the body, the materials used in them must meet high demands on safety and flexibility. The silk thread that the researchers tested has a coating made of a conducting polymer. It is a plastic material with a chemical structure that makes the material electrically conductive and well adapted to textiles.

"The polymers that we use are bendable, lightweight and are easy to use in both liquid and solid form. They are also non-toxic," says Mariavittoria Craighero, who is a doctoral student at the Department of Chemistry and Chemical Engineering at Chalmers University of Technology, and first author of a recently published study.

Enhanced stability and conductivity:

The method used to make the electrically conductive thread is the same as used in previous studies within the same research project. Previously, the thread contained metals to maintain its stability in contact with air. Since then, advances have been made to manufacture the thread with only organic (carbon-based) polymers. In the current study, the researchers have developed a new type of thread with enhanced electrical conductivity and stability.

"We found the missing piece of the puzzle to make an optimal thread -- a type of polymer that had recently been discovered. It has outstanding performance stability in contact with air, while at the same time having a very good ability to conduct electricity. By using polymers, we don't need any rare earth metals, which are common in electronics," says Mariavittoria Craighero. To show how the new thread can be used in practice, the researchers manufactured two thermoelectric generators -- a button sewn with the thread, and a piece of textile with sewn-in threads. When they placed the thermoelectric textiles between a hot and a cold surface, they could observe how the voltage increased on the measuring instrument.

The silk thread that can turn clothes into charging stations

The effect depended on the temperature difference and the amount of conductive material in the textile. As an example, the larger piece of fabric showed about 6 millivolts at a temperature difference of 30 degrees Celsius. In combination with a voltage converter, it could theoretically be used to charge portable electronics via a USB connector. The researchers have also been able to show that the thread's performance is maintained for at least a year. It is also machine washable "After seven washes, the thread retained two-thirds of its conducting properties. This is a very good result, although it needs to be improved significantly before it becomes commercially interesting," says Mariavittoria Craighero.

Can meet functions that these textiles require:

The thermoelectric fabric and button cannot be produced efficiently outside the lab environment today. The material must be made and sewn in by hand, which is time-consuming. Just sewing it into the demonstrated fabric required four days of needlework. But the researchers see that the new thread has great potential and that it would be possible to develop an automated process and scale up.

"We have now shown that it is possible to produce conductive organic materials that can meet the functions and properties that these textiles require. This is an important step forward. There are fantastic opportunities in thermoelectric textiles and this research can be of great benefit to society," says Christian Müller, Professor at the Department of Chemistry and Chemical Engineering at Chalmers University of Technology and research leader of the study.

More about the research field:

Interest in organic electronics with conjugated polymers has grown a lot in recent years. Conducting polymers have a chemical structure that allows them to conduct electricity similar to silicon, and at the same time they have the physical properties of plastic materials which makes them flexible. Research on conducting polymers is ongoing in many areas such as solar cells, the Internet of Things (IoT), augmented reality (AR), robotics and various types of portable electronics.

Science
Daily July
25, 2024

Source: Chalmers University of Technology

Expert Lectures/Seminars/Courses Organised

- Department of Electronics and Telecommunication Engineering of K. K. Wagh Institute of Engineering Education and Research Nashik, organized an Expert talk on "Digital Profiling" by Mrs. Vaishali Gawhankar, Gyanmudra Solutions pvt.Ltd. on 5TH October 2024 from 10:30 to 12:15 pm.

K. K. Wagh Education Society's
K. K. Wagh Institute of Engineering Education and Research, Nashik
Website: www.engg.kkwagh.edu.in
(An Autonomous Institute from A.Y – 2022-2023)
Department of Electronics & Telecommunication Engineering
in collaboration with IETE
Organizes
Expert talk on
"Digital Profiling"

Mrs. Vaishali Gawhankar
Director
Gyanmudra Solutions Pvt. Ltd. Mumbai

On 5th October 2024 from 1:00 PM to 3:00 PM
Venue: T.Y. Classroom, 3rd Floor, E & TC Department
Attendees: T Y B. Tech (E & TC) Students

Dr. S. A. Patil(Ugale) | U.G. Co-ordinator
Dr. D. M. Chandwadkar | Dean, Student Affairs, HOD, E & TC Engg.
Dr. K. N. Nandurkar | Principal

- Department of Electronics and Telecommunication Engineering of K. K. Wagh Institute of Engineering Education and Research Nashik, in collaboration with IETE Nashik subcenter organized an Expert talk on "IoT in Real Life Applications" by Mr.Siddharth S.Mandwade, Director,Sunanda Infotech Pvt.Ltd. on 05/10/2024 from 10:30 to 12:15 pm.

K. K. Wagh Education Society's
K. K. Wagh Institute of Engineering Education and Research, Nashik
Website: www.engg.kkwagh.edu.in
(An Autonomous Institute from A.Y – 2022-2023)
Department of Electronics & Telecommunication Engineering
in collaboration with IETE
Organizes
Expert Talk on
"IoT in Real Life Applications"

Mr. Siddharth S. Mandwade
(Director, Sunanda Infotech Pvt. Ltd., Nashik)

on 05th October, 2024, From 10:25 pm to 12:15 pm
Venue: MBA Seminar Hall, 4th floor, MBA Department, KKWIEER

Dr. S. A. Patil(Ugale) | U.G. Co-ordinator
Dr. D. M. Chandwadkar | Dean, Student Affairs, HOD, E & TC Engg.
Dr. K. N. Nandurkar | Principal


Expert Lectures/Seminars/Courses Organised

- Department of Electronics and Telecommunication Engineering of K. K. Wagh Institute of Engineering Education and Research Nashik, in collaboration with IETE Nashik subcenter organized an Expert talk on "Digital Profiling" by Mrs. Vaishali Gawhankar, Gyanmudra Solutions pvt.Ltd. on 5th October 2024, from 01:00 pm to 03:00 pm.

K. K. Wagh Education Society's
K. K. Wagh Institute of Engineering Education and Research, Nashik
Website: www.engg.kkwagh.edu.in
(An Autonomous Institute from A.Y – 2022-2023)

Department of Electronics & Telecommunication Engineering
in collaboration with IETE
Organizes
Expert talk on

"Digital Profiling"


Mrs. Vaishali Gawhankar
Director
Gyanmudra Solutions Pvt. Ltd. Mumbai

On 5th October 2024 from 1:00 PM to 3:00 PM
Venue: T.Y. Classroom, 3rd Floor, E & TC Department
Attendees: T Y B. Tech (E & TC) Students

Dr. S. A. Patil(Ugale) | Dr. D. M. Chandwadkar | Dr. K. N. Nandurkar
U.G. Co-ordinator | Dean, Student Affairs, HOD, E & TC Engg. | Principal

- Department of Electronics and Telecommunication Engineering of K. K. Wagh Institute of Engineering Education and Research Nashik, in collaboration with IETE Nashik subcenter organized Panel Discussion on "Statistical Modelling using GMM HMM & Machine Learning using MATLAB" by Prof. Dr. Shrikant Joshi, VIT, Pune on 10th October 2024, at 10:00 am.

K. K. Wagh Education Society's
K. K. Wagh Institute of Engineering Education and Research, Nashik
Website: www.engg.kkwagh.edu.in
(An Autonomous Institute from A.Y – 2022-2023)

Department of Electronics & Telecommunication Engineering
in collaboration with IETE
Organizes Expert talk on

**"Semiconductor Physics :
The foundation of Modern Electronics "**


Prof. Dr. Shrikant Joshi
(VIT, Pune)

On 9th October 2024 From: 1:00 pm to 3:00 pm
Venue: AV Hall, Third floor, E & TC Department, KKWIEER

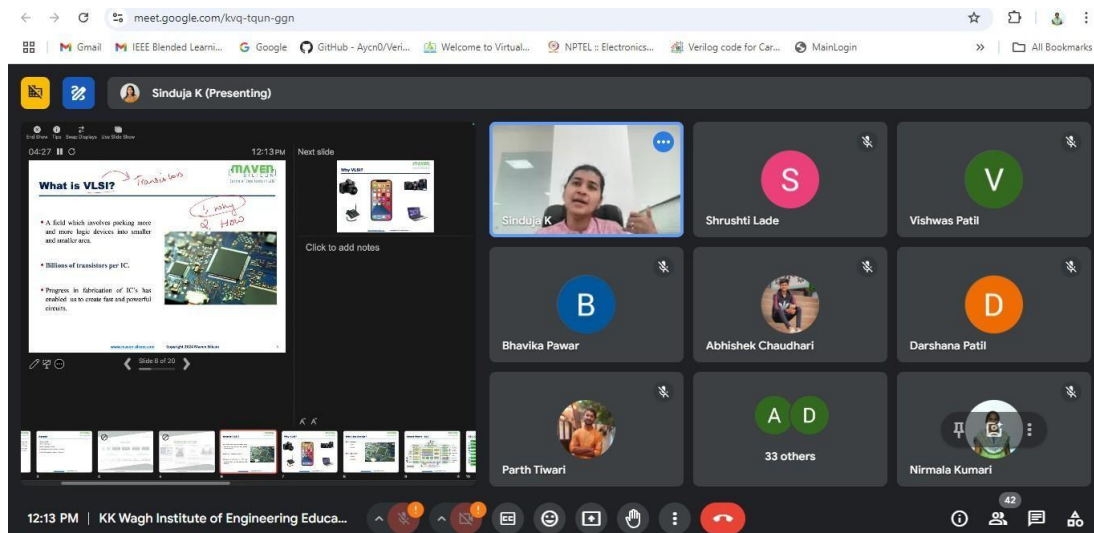
Dr. S. A. Patil(Ugale) | Dr. D. M. Chandwadkar | Dr. K. N. Nandurkar
U.G. Co-ordinator | Dean, Student Affairs, HOD, E & TC Engg. | Principal

Expert Lectures/Seminars/Courses Organised

- Department of Electronics and Telecommunication Engineering of K. K. Wagh Institute of Engineering Education and Research Nashik, in collaboration with IETE Nashik subcenter organized an Expert talk on "Webinar on Indigenous DC fast charger for Electric Bus and Truck" by Prof. Dr. S. A. Patil (Ugale) Professor E&TC Department on 14th October 2024 from 03:00 pm to 04:00pm.



- Department of Electronics and Telecommunication Engineering of K. K. Wagh Institute of Engineering Education and Research Nashik, in collaboration with IETE Nashik subcenter organized an Expert talk on "Webinar on VLSI Trends and Future Scope" by K. Sinduja Maven Silicon, Bangalore on 17th October 2024, from 01:00 pm to 03:00pm.



Industrial Training / Visits/ Workshop done by Staff

Industrial Visit of SY BTech (Div A and B) students to Cyber Sanskar, Gangapur Road, Nashik on 25th October 2024 .



Achievements of Students/ Teachers/ staff

Certificate to Dr. Anshu Gupta Assistant Professor E&TC Department for Transforming education with AI:Strategies for innovation and engagement





Training and Placement Cell (Campus Placement)

Sr. No.	Name of Student	Company Name	Package
1.	Prathmesh Prashant Deore	Virtuoso Optoelectronics Limited.	2.28
2.	Vishwesh Gorakh Bagul	Virtuoso Optoelectronics Limited.	2.28
3.	Abhishek Chaudhari	Virtuoso Optoelectronics Limited.	2.28
4.	Rahul Beeraladinni	Fox Solutions	4.02
5.	Krish Dipak Makhwane	Fox Solutions	4.02
6.	Tejashri Mahajan	IB	4

**Published by Department of E&TC
K. K. Wagh Institute of Engineering Education & Research, Nashik
Hirabai Haridas Vidyanagari, Amrutdham, Panchavati, Nashik-422003.**

**Editor: Prof. Snehal D. Raut
Email: sdraut@kkwagh.edu.in**



EDITORS

- **Krish Makwane**
- **Tejashri Mahajan**
- **Pankaj Pardeshi**
- **Saloni Ahire**

VISION

Excel in quality technical education and research in Electronics and Telecommunication (E&TC) Engineering for sustainable development of industry and betterment of society.

MISSION

M1: To provide quality education for the preparation of technically and professionally competent E&TC engineers

M2: To create an environment to enhance life-long learning and 21st century skills

M3: To inspire students' innovative thinking and creativity to promote research culture.