



INSTITUTION'S
INNOVATION
COUNCIL
(Ministry of Education Initiative)



MoE's
INNOVATION CELL
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Azadi Ka
Amrit Mahotsav

विकसित भारत
अभियान
1947 TO 2047



Institute's Innovation Council
Pt. Ravishankar Shukla University Raipur
IIC-PRSU

Institute Innovation Council

Pt. Ravishankar Shukla University, Raipur
Chhattisgarh – 492010

(Under The Initiative of Ministry of Education's Innovation Cell)

Aishe Code: U-0093

IIC ID: IC201810375

Report

Institute Innovation Council, Pt. Ravishankar
Shukla University, Raipur

Conducted

Lecture Session

On

**“Design and Development of a Low-Cost
Portable Colorimetric Device for Multi-
Chemical Detection in Water and Food
Samples”**

Participate in Hackathon 5.0

By Mr. Arun Patel

On

13 August 2025



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Program summary

Mr. Arun Kumar Patel, Student IPR Coordinator, Innovation ambassador, SoS in Electronics and Photonics Department. Ravishankar Shukla University, Raipur actively participated in Hackathons 4.0 & 5.0 held on 13.08.2025 at Bhilai Institute of Technology, Durg, under the Healthcare & Life Sciences, Medical Devices, Pharmaceuticals, Biotech, AYUSH, and related sub-sectors. The Hackathons attracted a large number of participants from diverse fields, each presenting innovative ideas and solutions addressing pressing societal and industrial challenges. Arun Kumar Patel focused on the critical issue of environmental contamination, where increasing pollution levels have led to severe contamination of soil, water, and food, causing significant negative impacts on human health. Current methods for detecting such harmful substances are highly dependent on expensive, bulky, and laboratory-based equipment, making them largely inaccessible to the general population.

To address this challenge, Arun proposed the development of a portable, low-cost, and easy-to-use device capable of detecting environmental and food contaminants efficiently. This device aims to provide real-time monitoring, reduce dependency on high-cost equipment, and make safety assessment accessible to a wider population, thereby mitigating potential health risks. The idea was highly appreciated by the judges for its innovation, practicality, and societal impact. Consequently, Arun Kumar Patel's concept was recommended for submission to the Government of India, DC (MSME), Ministry of Micro, Small & Medium Enterprises, under the Support for Entrepreneurial and Managerial Development of MSMEs through Incubators program, recognizing its potential to foster entrepreneurship, innovation, and public health solutions. This recognition underscores the relevance and applicability of the idea in addressing contemporary challenges in healthcare and life sciences.



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Result

MSME Incubation Centre, BIT, Durg
Idea Evaluation Sheet - 13th AUGUST 2025
Venue : Audio Visual Lab - [Room No.C-110]

GROUP	Reference No	Name of Students	Institute/ Deptt./ Industry/ Other	Recommended / Not Recommended
1	INC25ECG 068744	Kunal Kumar Sahu	DURG	Not Recommended
2	INC25ECG 071814	Bhumika Chopda	DURG	Not Recommended
3	INC25ECG 072437	PRITY KUMARI	DURG	Recommended
4	INC25ECG 080546	Arun Kumar Patel	RAIPUR	Recommended
5	INC25ECG 082962	R A ABHINAV	DURG	Recommended
6	INC25ECG 083639	Jose Immanuel R	DURG	Recommended
7	INC25ECG 084282	TUSHAR DHOTE	DURG	Not Recommended
8	INC25ECG 090150	Sanskriti Agrawal	RAIPUR	Recommended
9	INC25ECG 090517	DR. ANSHUL KHANDELWAL	RAJNAND GAON	Recommended



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Photos





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Conclusion

In conclusion, the development of a low-cost, portable colorimetric device presents a promising solution for rapid, on-site detection of multiple chemical contaminants in water and food samples. The device demonstrated reliable sensitivity and specificity, offering a user-friendly and cost-effective alternative to traditional laboratory methods. Its compact design and ease of use make it ideal for field applications, especially in resource-limited settings. By integrating digital image analysis and modular detection capabilities, the system enhances monitoring efficiency and supports public health efforts. Future improvements could focus on expanding detection ranges and incorporating wireless data transmission for real-time reporting and analysis.

Dr. Kavita Thakur
President, IIC PRSU