

Expert talk

Organizer: The Industry Institute Collaboration Cell (IICC), Chemical Engineering Association (CHENITA), and Indian Institute of Chemical Engineers (IChE)

Title of the Talk: Application of Chemical Engineering Principles in Food Industry: From Processing to Product Development

Expert Speaker: Dr. Alok Sharma, Senior R&D Manager, Manorama Industries Ltd., Raipur, Chhattisgarh, India

Venue: G-41 (e-classroom), Department of Chemical Engineering at the National Institute of Technology Raipur

Date and Time: 2nd April 2026 at 3:00 PM

Participants: All faculty members, research scholar and students (Approx 80 participants)

Biosketch of Dr. Alok Sharma:

Alok Sharma is a Chemical Engineer with interdisciplinary skills in biotechnology and food technology. He obtained his PhD in Chemical Engineering from the Department of Chemical Engineering, National Institute of Technology (NIT) Raipur. He completed his MTech in Food Technology with specialization in Food Process Engineering from Sam Higginbottom Institute of Agriculture, Technology and Science (SHIATS), Allahabad, after qualifying the GATE examination, and earned his BE in Biotechnology from Raipur Institute of Technology, Raipur.

He has over 11 years of industrial experience across distillery operations, grain quality and post-harvest systems, spices and condiments, and bakery processing, including research and development and process control roles in large-scale food manufacturing. In parallel, he has been actively engaged as a freelance consultant in agriculture, farming, and agro-processing, contributing to practical and scalable solutions.

His research interests focus on chemical and food process optimization, lipid and specialty fats processing, functional foods and nutraceuticals, and bioprocess and fermentation engineering. He has authored more than 20 peer-reviewed research papers and book chapters and holds granted patents in the area of applied food and process engineering. Currently, he is working as Senior Manager – R&D and Quality Control at Manorama Industries Limited, Mahasamund (specialty oils and fats industry), where his work emphasizes translational research, sustainable processing and industrially viable innovation.

Expert talk:

The expert talk covered a wide range of important topics in heat and mass transfer operations, reaction engineering, process design and scale-up, and many other significant issues in chemical and process engineering. Additionally, it emphasized the importance of crystallization and phase behavior management in industrial applications, sophisticated separation and purification methods, and process optimization for increased efficiency. The discussion also focused on sustainable waste management techniques and the importance of process automation and control in contemporary industries. Rheology and transport phenomena were also discussed, along with the significance of efficient supply chain and cold chain management in guaranteeing operational dependability and product quality. The expert talk explained the importance of process design and scale-up in industrial manufacturing through the development of process flow diagrams (PFDs), P&IDs, equipment selection, utility integration, and plant layout planning for efficient and hygienic operations. Continuous edible oil refineries, dairy processing facilities, aseptic beverage filling lines, IQF frozen food systems, and continuous chocolate tempering and molding operations were among the industrial examples covered in the session. Technologies for separation and purification, such as membrane and thermal hybrid systems, high-purity fractionation, and commercial uses such as degumming, ultrafiltration, centrifugation, protein isolation, and oleoresin extraction procedures, were also discussed by Dr. Alok Sharma. The expert talk also discussed sustainable waste management techniques, such as effluent treatment plants (ETP), water recycling and zero liquid discharge (ZLD) systems, by-product valorization, and life cycle assessment (LCA). Industrial examples included the recovery of fatty acids from soap stock, the use of whey, the production of biogas, the extraction of pectin, and the rendering of meat industry by-products.

The expert talk included an informative video presentation highlighting Manorama Industries' production process, raw material procurement, and research and development initiatives. Mango butter, sal butter, shea butter, kokum butter, phulwara butter, mowrah butter, and dhupa butter are just a few of the company's value-added goods that were showcased during the session. It also described the main raw materials that are used, which are mostly gathered by tribal people and forest inhabitants. These include sal seeds, mowrah seeds, palm kernels, shea nuts, and mango kernels. The presentation highlighted the company's dedication to sustainable practices and direct sourcing by establishing connections with thousands of villages and

sustaining the livelihoods of millions of women and communities that depend on forests. From the collecting, drying, storage, and transportation of seeds to the extraction, refining, fractionation, blending, and packaging of specialty fats and oils, Manorama Industries makes substantial use of chemical engineering techniques. In order to guarantee effective processing, product quality, energy efficiency, and sustainable industrial practices, the operations incorporate key ideas like heat and mass transfer, reaction engineering, fluid mechanics, crystallization, rheology, adsorption, distillation, phase equilibrium, mixing, solvent extraction, process optimization, safety engineering, and shelf-life modeling.

All faculty, Ph.D. scholars, and M.Tech students were present to attend the Expert talk.

Photos:







