

Departmental Seminar

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Seminar Title	: Conference Return Seminar on Enhancing co-gasification of biomass and coal: the role of drying and chemical leaching. (Presented at The 23rd International Drying Symposium (IDS 2024))
Speaker	: prof. Prateek Khatri
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Venue	: Old Seminar Hall, Dept. of Chemical Engineering
Date and Time	: 27 Dec 2024 (11.00 A.M.)
Abstract	: Co-gasification of biomass with coal presents a viable strategy for increasing energy efficiency and reducing environmental impact in power generation. However, the high moisture content and presence of alkali metals in biomass pose significant challenges, affecting gasification efficiency and causing operational issues such as slagging and fouling. This study explores the impact of drying and chemical leaching to enhance biomass for co-gasification. By using thermal drying, biomass moisture content is reduced from 40-60% to below 10%, greatly improving its higher heating value (HHV). Chemical leaching with water/dilute acids effectively removes problematic alkali metals like potassium, sodium, and chlorine, which contribute to ash-related complications during gasification. Through these pre-treatment methods, biomass properties are optimized, leading to improved gasification performance and syngas production. These findings highlight the potential of drying and leaching as innovative strategies for enhancing co-gasification, offering a cleaner, more sustainable approach to future energy production and environmentally responsible power generation. Keywords: co-gasification, biomass, syngas production, sustainable energy, power generation, biomass pre-treatment