Organised by Material Engineering Technical Division (MaTD)

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The Institution of Engineers, Malaysia

WEBINAR TALK ON

ENGINEERING INNOVATIONS FROM FORESTRY BIOMASS TO HIGH-PERFORMANCE MATERIALS: CELLULOSE AND LIGNIN IN THE AGE OF NET-ZERO

SPEAKER:

Prof. Ir. Dr. Leo Choe Peng

9 JANUARY 2026, FRIDAY

3.00 PM – 5.00PM

BEM Approved CPD: 2
Ref. No.: IEM25/HQ/606/T(w)

Registration Fees
Student Members : Free
IEM Members : RM 15.00
IEM Non Members : RM 70.00
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SYNOPSIS

This webinar explores how natural polymers—cellulose and lignin—are revolutionizing modern engineering through sustainable material innovation. Drawing from Leo's extensive research in carbon capture, membrane technology, and bio-based composites, the session highlights how these abundant forestry-derived biomaterials can be engineered into high-value applications such as advanced coatings, membranes, hydrogels, underfills, and structural composites. The presentation will discuss the molecular and thermomechanical characteristics of cellulose and lignin, recent breakthroughs in their chemical modification and hybridization, and real industrial case studies from patented works and award-winning innovations. It will also address how these materials support the circular bioeconomy and Malaysia's net-zero carbon ambitions, offering engineers and researchers new pathways for sustainable design, manufacturing, and energy transition aligned with emerging global trends.

SPEAKER'S PROFILE

Ir. Dr. Leo Choe Peng is a Professor at the School of Chemical Engineering, Universiti Sains Malaysia (USM). Her research focuses on innovative materials for carbon capture and water reuse. As a Professional Engineer (Ir.), she also holds several professional qualifications, including GBI Facilitator, GRI Professional, and HRDF-Certified Trainer. She has published over 160 indexed journal papers, with a total citation count exceeding 7,000 and an h-index of 45 (Google Scholar). She was a finalist for the AGFD Young Scientist Award (American Chemical Society) and has received numerous prestigious recognitions, including the Women in Science Award (Ton Duc Thang University, Vietnam), Innovation Fellowship Leader, Frontier Champion, and Distinguished International Researcher (Royal Academy of Engineering, UK). Prof. Leo was recently recognized as a Top Research Scientist Malaysia (TRSM) 2022, a Top 2% Scientist (Stanford University) 2025, and an Outstanding Scientist in Natural Gas Science and Engineering (Elsevier). Her engineering innovations have led to three patent filings and multiple international awards, including the GIST Catalyst 1st Prize (U.S. Department of State), the Real Tech Holdings Award (Tech Planter Asia 2022), the Malaysia Tech Plan Demo Grand Prize, the Mitsui Chemicals Award, and several Gold Medals at international innovation exhibitions. She has also served as the Honorary Secretary of the Institution of Engineers Malaysia (Penang Branch), and as a committee member of the American Chemical Society Malaysia Chapter and the Malaysian Materials Science Society.