



DANIEL A. HICKMAN

THE DOW CHEMICAL COMPANY

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322 ISE LAB | 2:30 P.M.

Dan Hickman is a Senior R&D Fellow in the Engineering and Process Science department of Dow's Core Research & Development organization. In 31 years with Dow, he has served as a subject matter expert and technical leader in reaction engineering and process development for numerous reaction systems across many Dow businesses and technologies. His contributions at Dow include the conceptual design of new reactor systems for three commercial processes and the development of training and resources that facilitate efficient and reliable reactor scale-up from the laboratory. He holds 25 patents and has authored 32 journal articles and book chapters and more than 200 internal Dow reports.

THE ENERGY TRANSITION FOR THE CHEMICALS AND MATERIALS INDUSTRY

Steam cracking is Dow's largest energy-consuming chemical conversion process. Dow is working to electrify steam cracking by pursuing multiple alternative technologies. This presentation will compare various approaches for CO₂ mitigation of the steam cracking process technology, including CO₂ electroreduction, process heating with renewable electricity, and burning green hydrogen. We will also review the relative thermodynamics and energy efficiencies of CO₂ capture from concentrated point sources or ambient air. We will conclude with a brief description of some steps Dow is taking to decarbonize while continuing to grow, followed by a brief look at the global commitment required to achieve substantial worldwide decarbonization by 2050.