



**Wolfson Department of Chemical Engineering Seminar
Zoom Seminar**

February 19, 2024 at 13:30

Zoom Seminar - <https://technion.zoom.us/j/95540749716>

**“Thermochemical Conversion of Biomass/Plastic into Value-Added Fuels, Chemicals,
and Materials”**

Dr. Xi Gao - Chemical Engineering - GTIIT, China

Thermal/thermochemical conversions (pyrolysis and catalytical upgrading) of biomass (or/and plastic) have received more attention recently as they offer a promising technology to utilize waste solid materials for value-added fuels, chemicals, and materials. However, efficiently converting biomass/plastic into high-valued products faces significant challenges, and it is important to investigate the pyrolysis mechanism, the catalytic mechanism, the multiscale transport phenomena, and related process equipment. This seminar will update our processes in various fields, including (1) the investigations of pyrolytic and catalytic conversion of biomass/plastic into high-value products, such as biofuels, hydrogen, biomass-based renewable monomers, carbon-based catalysts, (2) the investigation of pyrolysis mechanism, synergistic effect of biomass/plastic co-pyrolysis, and pyrolysis reactors using advanced experiment measurement, computational fluid dynamics simulation, and machine learning, (3) software and machine learning models development for process equipment design, optimization, and scale-up.

Short bio:

Xi Gao is an associate professor of Chemical Engineering at Guangdong Technion-Israel Institute of Technology. He is a national high-level young talent and Shantou City high-level talent. He obtained BS/MS/PhD from Xiamen University, Zhejiang University, and Iowa State University respectively, and worked as a postdoctoral researcher and later a research scientist at the US Department of Energy National Energy Technology Laboratory. He has conducted in-depth research in the fields of chemical reactor engineering, biomass/plastic thermochemical conversion technology, multiphase flow simulation, and machine learning. He led the development of multiple solvers in the world-renowned open-source CFD software MFIX. He holds 1 national invention patent and published more than 60 scientific papers. He is the PI for several national and provincial projects. He served as the guest editor of Industrial & Engineering Chemistry Research, the youth editorial board member of Carbon Neutrality and Frontiers in Energy (Springer), and the youth member of the process simulation and simulation professional committee of the Chemical Industry and Engineering Society of China. He served as the chair of the international conference sessions several times and gave 10+ invited talks and presentations. He was named as the ACS Industrial & Engineering Chemistry Research 2023 Class of Influential Researchers and 2023 Guangdong Technion Excellent Young Faculty Chair.