Abstract:
Market disruptions caused by three new macro changes may reshape the transportation markets: the push to zero emissions solutions, the push for energy independence, and the push for connected systems. This is driving technology improvement needs in high power and high energy electrification and battery systems. Critical technology innovation is needed from H2-PEMs solutions to reach competitive scale and costs. While delivery of technical solutions in these areas are critical, it is likely that broad scale adoption will still be limited over the next decade in both North America and global markets unless driven by aggressive policy. As a result, it remains critical that significant improvements in emissions and efficiency capability from conventional diesel and spark ignited power trains continue to be developed and brought to market. Innovative solutions in system level control, model-based development, and connected cloud-based computing remain vital areas of development. To bring about these critical solutions for intermediate and sustainable futures, it is critical that collaborative academic/industrial development contour. But it is imperative that the next generation of market innovators understand the challenges and get passionate about finding the solutions.

Bio:
Tim Frazier is currently the Executive Director of Advanced Engineering, where he is responsible for combustion research, catalyst technology, electrification technology, product validation, advanced dynamic systems and controls, advanced systems integration, advanced systems design, computation and experimental fluid mechanics, Engine business technology integration, Power Systems technology integration, emissions development, systems performance analysis, and ignition systems along with the advanced engineering teams in India and China. Tim has been with Cummins for 21 years, starting in the Combustion Research organization, and has worked on a variety of advanced combustion system technologies which have contributed to performance and emissions controls across the product range. Tim obtained his Doctorate in Mechanical Engineering specializing in ultralow emissions technology from the University of Illinois. In addition, he holds a Master of Science and a Bachelor of Science in Mechanical Engineering also from the University of Illinois.