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Dr. Zitney has over 20 years experience in process systems engineering R&D, with a strong emphasis in the areas of steady-state and dynamic process simulation and optimization; real-time operator training systems (OTS) and 3D virtual immersive training systems (ITS); process/equipment co-simulation and computational fluid dynamics (CFD); and advanced numerical methods and high-performance computing. At the U.S. Department of Energy's (DOE) National Energy Technology Laboratory (NETL), Dr. Zitney serves as Director for the Advanced Virtual Energy Simulation Training And Research (AVESTAR) Center which provides R&D, education, and training for the operation and control of advanced energy systems. Scheduled to launch in summer 2011, the AVESTAR Center will offer a full-scope, real-time dynamic simulator with combined OTS/ITS capabilities for an integrated gasification combined cycle (IGCC) power plant with carbon capture. Under the auspices of the DOE/NETL-led Carbon Capture Simulation Initiative (CCSI), work is also underway on the development of real-time dynamic simulators for conventional pulverized coal plants retrofitted with post- and oxy-combustion CO_2 capture.

Dr. Zitney also directs Process & Dynamic Systems Research under NETL's Regional University Alliance (NETL-RUA) with Carnegie Mellon University, the Pennsylvania State University, the University of Pittsburgh, Virginia Polytechnic Institute and State University, and West Virginia University. This collaborative R&D program addresses the computational and optimization challenges arising in all major phases of the energy plant lifecycle from process design and optimization to plant operations and control. It includes NETL's award-winning Advanced Process Engineering Co-Simulator (APECS), a versatile and powerful software toolkit for developing next-generation process and energy plants using advanced process/CFD co-simulation, reduced order modeling, and comprehensive design optimization. In the plant operations phase, research efforts are focused on dynamic simulation, advanced process control, sensor placement, and virtual plant simulation in support of AVESTAR R&D, training, and educational activities.

Before joining NETL in 2004, Dr. Zitney held senior consulting and R&D management positions at Fluent, a leading provider of CFD software, Aspen Technology, a major supplier of process simulation software, and Cray Research, a leading provider of supercomputing tools to the process industries. He received M.S./Ph.D. degrees in Chemical Engineering from the University of Illinois at Urbana-Champaign and a B.S. degree in Chemical Engineering and Engineering & Public Policy from Carnegie Mellon University. Dr. Zitney has authored and co-authored over 60 publications, 110 conference presentations, and 40 invited presentations in process systems engineering. Dr. Zitney is currently a Trustee of the CACHE Corporation, member of the West Virginia Academy of Science, and an active member of the American Institute of Chemical Engineers (AIChE) including Meeting Programming Co-Chair for the 2012 AIChE Annual Meeting to be held in Pittsburgh, PA. He has also chaired and co-chaired numerous technical conference sessions and served as the Director of AIChE's Computing and Systems Technology (CAST) Division from 1993-1995. In addition, Dr. Zitney is the winner of numerous awards including three prestigious R&D100 Awards and five Federal Laboratory Consortium (FLC) Awards for Excellence in Technology Transfer.