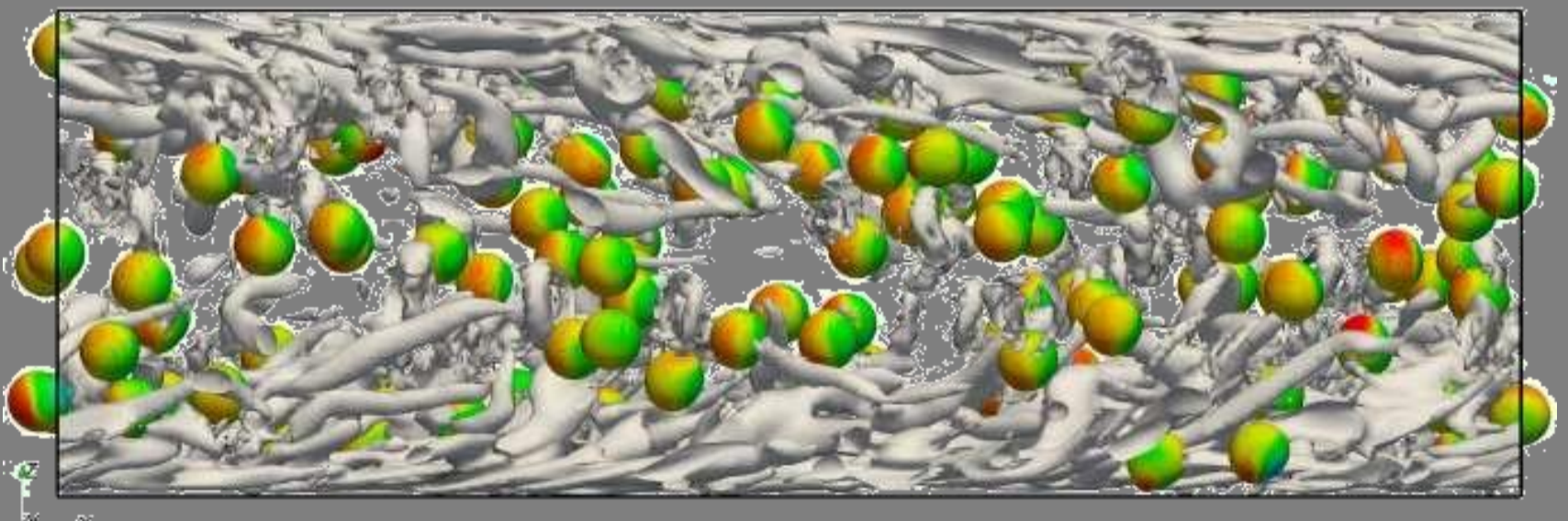




Metin Muradoglou

Interface-Resolved Simulations of Multiphase Flows of Complex Fluids

Multiphase flows are ubiquitous in a wide range of natural processes and industrial applications, and they often involve complex fluids exhibiting viscoelastic/viscoplastic behavior. In this talk, I'll describe a front-tracking method developed for interface-resolved simulations of multiphase flows ranging from very low Reynolds number laminar to high Reynolds number turbulent flows. Special emphasis will be placed on treatment of multi-physics effects such as soluble surfactant, viscoelasticity/viscoplasticity of dispersed and continuous fluids, phase change with chemical reactions and fluid-structure interactions. Sample results will be presented from various applications including pulmonary flows (airway closure and reopening), fuel droplet evaporation and burning, laminar and turbulent bubbly flows and drag reduction by polymer additives.





Metin Muradoglu

Dr. Metin Muradoglu

Dr. Muradoglu is a professor of Mechanical Engineering at Koc University. He received his BS degree in Aeronautical Engineering from Istanbul Technical University (ITU) in 1992, and MS and PhD degrees both from Cornell University in 1997 and 2000, respectively. He also worked as a postdoc at Cornell for about 18 months before joining the Koc University faculty in 2001. He has had visiting positions at Harvard, Notre Dame and Princeton Universities, and the Max-Planck Institute for Intelligent Systems in Stuttgart. Dr. Muradoglu's work has been recognized by multiple awards including the Turkish Academy of Sciences outstanding young scientist award (2009) and the Scientific and Technological Research Council of Turkey (TUBITAK) encouragement award (2010).

