

Brief Biographical Sketch

Professor Daniel Joseph:

Professor Daniel Joseph joined the Department of Aerospace Engineering and Mechanics at the University of Minnesota in 1963 and is one of the most honored faculty members in the University. He is the only faculty member at the University of Minnesota ever to be elected to the three most prestigious national academies: the National Academy of Science, the National Academy of Engineering, and the American Academy of Arts and Sciences.

The group directed by Professor Joseph is engaged in research on viscoelastic fluids, multiphase flows, fluidized beds, two-fluid dynamics, and drag reduction. Other projects are concerned with the motion of solid particles and drops and bubbles in Newtonian and viscoelastic fluids. The studies carried out in Joseph's lab are done with the aid of experiments, theory and high performance computing. One project focuses on water lubricating pipelining of heavy crude oils and dispersions. Stability theory shows that the water will stay on the wall where it lubricates the flow of the oil. Drag reductions of the order of the viscosity ratio can be achieved - reductions of a thousandfold or more. Another project is to understand the exceptional enhancements of the rheological properties of semi-dilute aqueous polymeric solutions seeded by small particles and nanoparticles.

Joseph has served both as a Russel J. Penrose Professor and as a Regent's Professor; the latter of the prestigious appointments is the highest recognition by the University for faculty members, and is awarded to those who have made unique contributions to the quality of the University through exceptional accomplishments in teaching, research and scholarship or creative work, and contributions to the public good. Dr. Joseph has authored five books, edited four books and authored over 300 articles. He is a named inventor of 10 patents, has consulted for over a dozen firms, and has served as an Associate Editor for 10 journals.