**Dynamics of microplastic anisotropic particles in turbulence**

Fragmentation of big plastic debris, fishing equipment and most importantly wastewater of washing machines and laundry process eventually produce dramatically increasing microfiber pollution in oceans with enormous consequences on the marine environment and food-chain. Photo-degradation, chemical, mechanical and bio-deterioration produce embrittlement of the plastics, which further leads to fragmentation into smaller pieces through wave action. These anisotropic elongated microfibers, with size distribution around 1 mm, can stay afloat on the surface, but can also be transported to deep oceanic regions by settling, drift, turbidity currents and thermohaline circulations. The need for efficient and sustainable remediation solutions is urgent, and it must be based on systematic understanding and modelling of the behaviour of microfibers in the oceans. With the final aim of predicting dispersion and sedimentation of microplastic pollution, we will briefly review the models used to describe the dynamics of small anisotropic particles in turbulence. We will finally present an experimental set up and  original results of a series of experiments focusing on the dynamics of non-axisymmetric anisotropic fibers.

**SHORT BIO**

Alfredo Soldati is professor of Fluid Mechanics and director of the Institute of Fluid Mechanics and Heat Transfer at TU Wien, Austria and part time professor at the University of Udine, Italy. His research focuses on physics and engineering of multiphase flows. Dr. Soldati received the 2007 ASME Robert Knapp award, the 2015 ASME Lewis Moody award, and in 2020 the ASME Freeman Scholarship. In 2013 he was elected Fellow of the American Physical Society and in 2020 was elected fellow of EUROMECH. In 2018 he received the International Prize and Gold Medal Panetti–Ferrari 2018 from Accademia delle Scienze, Torino, Italia. He is currently the Rector of the International Center for Mechanical Sciences (CISM) and the co-Editor in Chief of International Journal of Multiphase Flow.