LAUDATIO FOR PROFESSOR JEAN-FRANCOIS MOLINARI

Jean-François Molinari is Full Professor at the School of Architecture, Civil and Environmental Engineering (ENAC) within the Ecole Polytechnique Fédérale of Lausanne (EPFL), in Switzerland.
He is Director of the Computational Solid Mechanics Laboratory (LSMS), which is affiliated with the Institute of Civil Engineering and with the Institute of Materials Science and Engineering.
In 2019, he was elected Member of the Swiss National Science Foundation Research Council, in the Division 2, dedicated to Mathematics, Natural and Engineering Sciences.
Professor Molinari obtained his PhD from Caltech USA, in 2001. From 2000 to 2005, he was Assistant Professor of Mechanical Engineering at The Johns Hopkins University, Baltimore, U.S., and was promoted in 2006 to Tenured Associate Professor.
From 2005 to 2007, he was Professor at "Laboratoire de Mécanique et Technologie" of the Ecole Normale Supérieure de Cachan, in France.
From 2007 to 2012, he was Director of the Civil Engineering Institute, School of Architecture, Civil and Environmental Engineering at EPFL.
Since 2021, he is Co-Editor-in-Chief of ''Mechanics of Materials'' Elsevier Journal.

His research is at the interface between Mechanics, Materials Science, and Scientific Computing, with projects in fundamental and applied science/engineering. His team develops robust, physics-based numerical methods for High-Performance Computing, and shares their knowledge by releasing open-source software (Finite Element Method, Boundary Element Method, Direct Multiscale Methods for coupling discrete and continuum solvers); the developed methods and codes are now used in several institutions all over the world.
Research activities span mechanisms from the small scale (nanostructured materials, tribology) all the way to large length scales (structural mechanics, earthquake science). A central research theme is friction, fracture and emerging complexity at sliding interfaces. Recent breakthroughs bring a mechanistic and modern view to traditional engineering wear models, in particular for understanding adhesive wear at the asperity level. His scientific production includes more than 160 peer-reviewed publications (from 2001 to 2022).

Extremely relevant is his commitment to the training of young students; since 2006 he has supervised over 25 PhD individual programs (7 in progress), about as many Master projects, and Post-Doctoral Fellows. About half of his past collaborators are in permanent academic positions in leading research universities over the world.
He is currently responsible for several of the Mechanics classes in the Civil Engineering curriculum, which provide students with the fundamental skills needed for more advanced or applied classes in

structural mechanics (Continuum Mechanics, Numerical Methods, Mechanics of Solids and Structures, Multiscale Methods, Computational Solid Mechanics); his approach to teaching, mixing theory and practice, with class discussions, homework and moments of self-evaluation, led him to be nominated best teacher in the Civil Engineering department in 2012, 2013, and 2020.

The multidisciplinary aspects of his work, the awareness of the fundamental importance of open science and in particular open-source software, the ability to attract resources and to train new scientists also through innovative teaching methodologies make him a reference recognized worldwide.
For all exposed reasons the Committee, entrusted by the Scientific Committee of the International Research Center MeMoCS with the responsibility of awarding the International Eugenio Beltrami Prize, unanimously proposes Professor Jean-François Molinari as recipient of the 2021 edition.