COLLABORATIVE ADVANCES ON NON-NEWTONIAN FLUID MECHANICS, COMPUTATIONAL RHEOLOGY AND CONSTITUTIVE MODELLING WITH PROF. OCTAVIO MANERO BRITO

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In this presentation, the many facets of my collaborative research work done alongside Prof. Octavio Manero Brito and its impact are described in the context of the homage organized by the SPM committee to his successful career and as part of the Mexican academic community working on polymer engineering and science. On constitutive modelling, his contributions are noted for the conception and development of rheological equations-of-state applicable to conventional and living polymeric systems through the well-known Bautista-Manero-Puig family-of-fluid models, in which we have collaborated during the last years in the development of robust model-variants for micellar and polymeric fluids. On rheometry and non-Newtonian fluids mechanics, Prof. Manero has led his research group at Instituto de Investigaciones en Materiales, UNAM, in the development of extensive and thorough experimental techniques for soft-material characterisation, passing from molten polymers and blends used in many technological applications, to prototype medical devices; here, we have worked together recently in the development of rheo-optical data-acquisition techniques and its theoretical treatment for characterising the complex internal-structure evolution of wormlike micellar solutions. On computational rheology, we have collaborated actively in the development of algorithms and the attainment of numerical solutions in conditions of experimental operation for the flow of micellar solutions, polymeric solutions and melts in benchmark flows characteristic of polymer processing. Being one of the most accomplished Mexican rheologists, Prof. Manero stands as one of the main contributors in the country in many areas of Rheology and Non-Newtonian Fluid Mechanics, fact that has reflected in national and worldwide recognition of his work, with honours ranging from the top-rated Premio Nacional de las Ciencias y Artes, Mexico, and internationally, with the associate membership to the Institute of Non-Newtonian Fluid Mechanics, UK, and his current role as the Mexican representative fellow to the International Committee on Rheology, among many others. With all this background, the SPM committee, and Prof. López-Aguilar personally, congratulate Prof. Manero for over 40 years of scientific and academic activities that reflect his outstanding commitment to the development of top-quality basic science and technology on modern materials in Mexico.

Keywords: non-Newtonian fluid mechanics, constitutive modelling, computational rheology

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