



WORKING PLAN - MILESTONES

Year	Milestones	Activities	Expected results
2013	1. Selections of liquid samples (Newtonian and viscoelastic); selection and testing of micro-geometries for patterned surfaces	1.1. Samples acquisition and formulation of viscoelastic fluids	Annual Report
		1.2. Manufacture patterned surfaces (planar plates)	
	2. Testing and calibration of the platform for investigations of the fluid flows in microchannels.	2.1. Acquisition of the syringe pumps systems for the micro-PIV platform.	
		2.2. Testing the micro-PIV platform	
	3. Rheological characterization of the fluid samples in the presence of patterned surfaces.	3.1. Characterization of samples rheology in shear tests	1 paper submitted for ISI journal
3.2. Characterization of samples rheology in squeezing motion (strain controlled)			

Submitted ISI paper:

Tanase N.O, Broboana D., Balan C. (2013) *Free surface flows in vicinity of immersed cylinder*, Proc. Roum. Acad. Serie A.

Submitted Annual Report, 2013 (Romanian)

Year	Milestones	Activities	Expected results
2014	1. Investigations and characterization of fluid samples in presence of patterned surfaces (rheometry)	1.1. Rheometry in presence of patterned surfaces	Annual Report
		1.2. Communication of scientific results at international meetings (BSR and AERC)	
	2. Studies, modelling and analysis of fluid flows in vicinity of patterned surfaces	2.1. Acquisition and testing of the new software and data analysis system for the micro-PIV platform.	1 ISI paper published; 1 ISI paper submitted; 1 book submitted
		2.2. CFD analysis of the flows in patterned geometries (computational rheometry)	

Published ISI papers:

1. Broboana D., Tanase N.O., Balan C. (2014) *Influence of patterned surface in the rheometry of simple and complex fluids*, J. Non-Newtonian Fluid Mech., <http://dx.doi.org/10.1016/j.jnnfm.2014.10.006>¹
2. Ionescu E., Balan C., Kleebe H-J., Mueller M., Guillon O., Schliephake D., Heilmaier M., Riedel R., *High-temperature creep behavior of SiOC glass-ceramics: Influence of network carbon versus segregated carbon*, J. Am. Ceram. Soc., 1–8 (2014), DOI: 10.1111/jace.13206

Accepted for publication ISI paper:

Tanase N.O, Broboana D., Balan C. (2014) *Free surface flows in vicinity of immersed cylinder*, Proc. Roum. Acad. Serie A.

Submitted book for publication

Broboana D., Tanase N.O., Balan C. (2014) *Fluid mechanics with Fluent, vol. III - Rheology and Rheometry*, Politehnica Press, Bucharest (in Romanian)

Submitted Annual Report, 2014 (Romanian)

Year	Milestones	Activities	Expected results
2015	1. Establish the material functions which characterize the fluid rheology in presence of patterned surfaces (rheometry)	1.1. Correlation of the shear and transitory/oscillatory tests results in an unique frame (experiments in rotational configurations and microchannels); upgrade the rotational rheometer and flow visualization system.	Annual Report
		1.2 Communication of scientific results at international meetings (AERC)	
	2 Formulation of the constitutive model for simple and complex fluids in vicinity of smooth and patterned surfaces (applied rheology)	2.1. Experiments developed in cooperation with Laboratory partners; external consultancy	1 ISI paper published; 1 ISI paper submitted;
		2.2. Formulation of a novel constitutive model valid in the vicinity of solid walls.	

Year	Milestones	Activities	Expected results
2016	1. Design and testing of a new rotational configuration for fluid characterization in presence of patterned surfaces (rheometry)	1.1. Upgrade the rotational rheometers; experimental work	Annual Report
		1.2 Communication of scientific results at the International Congress of Rheology	
	2 Studies, modelling and analysis of fluid flows in vicinity of patterned surfaces	2.1. Summarizing the experimental studies and the final testing of the proposed experimental procedure	1 ISI paper published; 1 book submitted
		2.2. State a novel benchmark problem in applied rheology: fluid characterization in presence of patterned surfaces.	

¹ Relevant papers for the project are bold marked