SEVENTH FRAMEWORK PROGRAMME

HYDROFRAC
Industry - Academia Partnerships & Pathways

MARIE CURIE ACTIONS

HYDROFRAC: Industry – Academia Partnership

Enhancing research and technology

PRIFYSGOL ABERYSTWYTH UNIVERSITY

EUROTECH ADVANCED TECHNOLOGY PRODUCTS

RZESZOW UNIVERSITY OF TECHNOLOGY

NM STATE UNIVERSITY

SINTEF

EUROTECH | ADVANCED TECHNOLOGY PRODUCTS

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Cooperation between the Industry and Academia

- FP7 PEOPLE Programme: Industry-Academia Partnerships and Pathways (IAPP) - **Marie Curie Actions**
- Joint expertises and experience of Industry and Academia enable productive collaboration in frame of the HYDROFRAC project
- Strong connection between science, R&D and industry is one of key competitive advantages for business based on advanced technologies and knowledge

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PIAP – GA – 2009 – 251475 - HYDROFRAC

EUROTECH Cooperation with Academia:

- One of the major priorities for Eurotech is permanent development through active participation in research projects dealing with advanced novel and promising technologies
- This is why we established a strong collaboration with a numer of Polish, and overseas academic, research and industrial centres
- In particular in the area of oilfield technologies we are engaged in FP7 IAAP project **HYDROFRAC: enhancing hydraulic fracturing on the basis of numerical simulation of coupled geomechanical, hydrodynamic and microseismic processes**

Partners:

PRIFYSGOL ABERYSTWYTH UNIVERSITY

RZESZOW UNIVERSITY OF TECHNOLOGY

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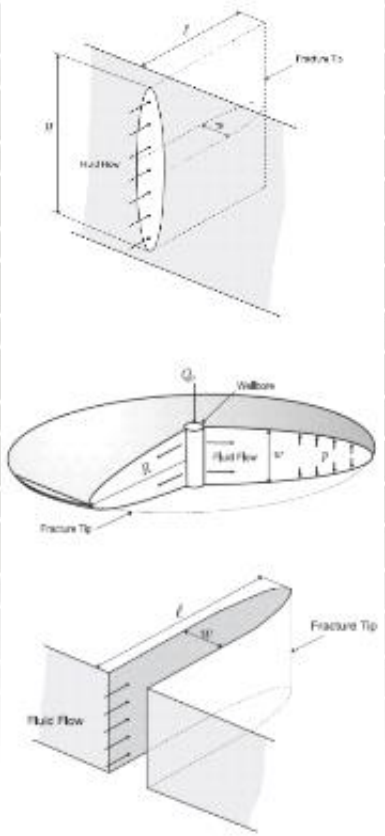
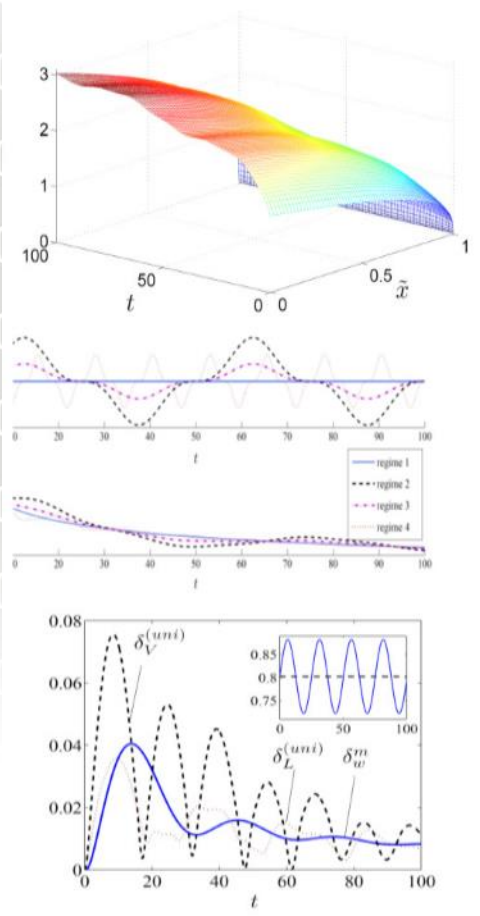


HYDROFRAC

- The project aims to enhance the hydraulic fracturing techniques for increasing productivity of oil and gas reservoirs
- This objective is being pursued by developing numerical simulation of coupled geo – mechanical, hydrodynamic and micro – seismic processes for proper choices of equipment, regimes and parameters of hydraulic fracturing



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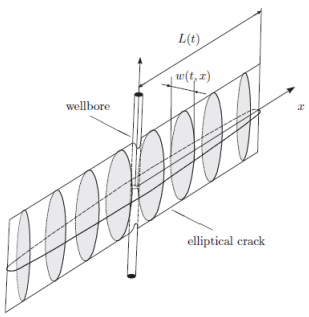
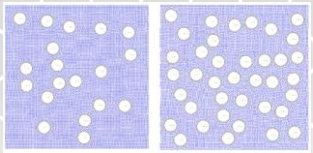
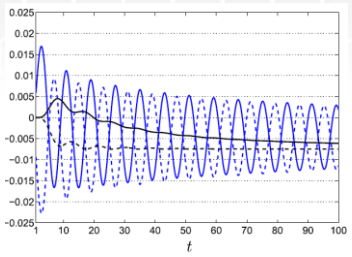
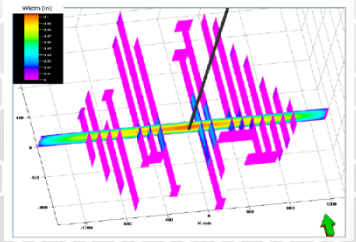
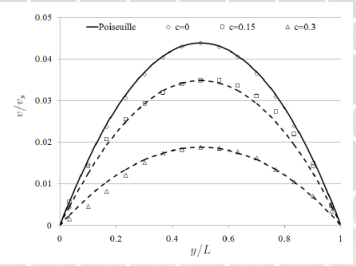


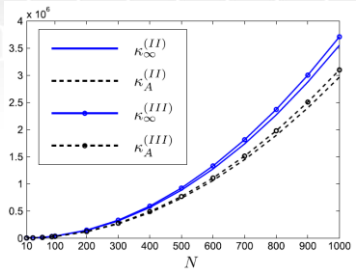




- The solvers/simulators already developed in the project combine accuracy and efficiency of computation, providing simultaneously excellent flexibility of the algorithms for different elasticity models, fracturing fluids, poroppant transport mechanisms and even multifracturing problems
- The key isuue to achieve these effects is utilization of standard numerical techniques like: FD, FV, BEM (fast multipole), SPH together with ‚proper' formulation of the problem. The latter refers to application of optimal dependent and independent variables and dedicated regularization techniques







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The researchers of **HYDROFRAC** consortium **participated in more than 20 international scientific events. Among them:**

- International Conference for Effective and Sustainable Hydraulic Fracturing (HF2013), Brisbane, 20-22 May 2013, Australia
- IUTAM 2012 Symposium - Fracture Phenomena in Nature and Technology. University of Brescia, Italy, July 1-5, 2012.
- 8-th International Symposium on Rockbursts and Seismicity in Mines. Saint Petersburg-Moscow, Russia; 1 - 8 September 2013.

HYDROFRAC dissemination: more than 30 publications in peer-refereed international scientific journals and conference proceedings.

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Conferences organised by HYDROFRAC Consortium

- Dissipative Rheology of Foams, Trinity College Dublin, Ireland (09-12.01.2012)
- The Second Wiener-Hopf Workshop, 2012, Aberystwyth University (25-26.06.2012)
- Minisymposium: Numerical Modelling of Hydraulic Fractures, APM-2012, St. Petersburg, Russia, 3 July
- The British Society of Rheology Midwinter Meeting 2012: Extensional Flows, Aberyswyth University (17-18.12.2012)

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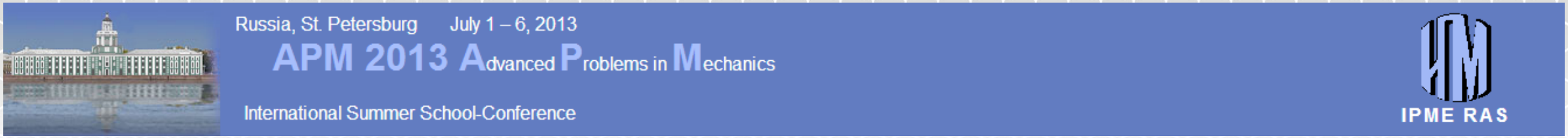
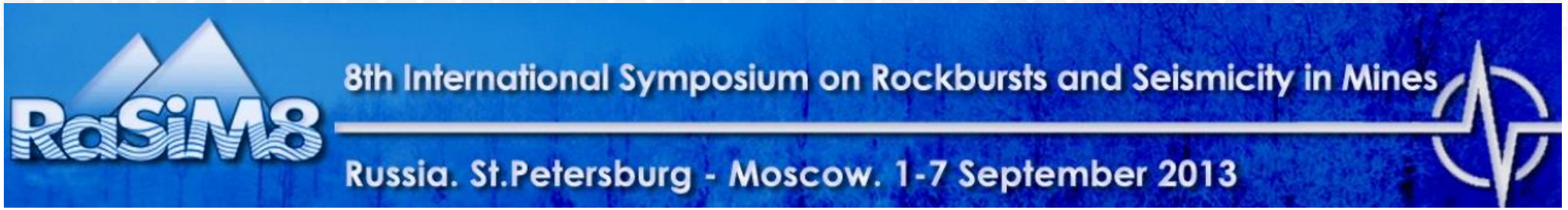
Conferences organised by HYDROFRAC Consortium

- APM-2013, Accompanying International Workshop: Recent advances in numerical simulation of hydraulic fracture, St. Petersburg, Russia, 2 July
- RaSiM8, 8th International Symposium on Rockbursts and Seismicity in Mines, St. Petersburg, Russia, 1-7 September 2013





Looking forward seeing you at upcoming events!

Key-note speakers for the upcoming HYDROFRAC2014 conference
(Recent Advances in Numerical Simulation of Hydraulic Fracture, Rzeszow 14-16 July 2014):

Prof. Charles Fairhurst (University of Minnesota)
Dr Branko Damjanac (ITASCA)
Prof. Mirko van der Baan (University of Alberta)

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Selected key-note lectures from the conferences organised so far by HYDROFRAC consortium:

- ***Numerical modelling of seismicity: Theory and applications*** by **Aleksander Linkov** Professor (Rzeszow University of Technology) and Chief Scientist (Institute for Problems of Mechanical Engineering, Russian Academy of Sciences)

- ***"Unconventional" challenges of hydraulic fracturing modeling*** by **Alexei Savitski**, (Shell International Exploration & Production)

- ***Proppant transport in hydraulic fractures: computer simulation of effective properties and movement of the suspension*** by **A.M. Krivtsov** (Russian Academy of Sciences)

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Further information available at:

http://fp7.imaps.aber.ac.uk/hydrofrac.html