

European Research & Innovation Project Innovative climate-control system to extend range of electric vehicles and improve comfort

Interview with Prof. Dr Oleg ILIEV

Senior scientist at the Fraunhofer Institute for Industrial Mathematics - ITWM, Germany

Can you please tell us a little bit about yourself?

I was born in Bulgaria and since my school years the mathematics was my favorite subject. With a grant from the Bulgarian Government, I was lucky to study computational mathematics in Moscow State University. This was also a chance to meet and to attend lectures from some of the top mathematicians of the 20-th century. I got my PhD in mathematics and physics also from Moscow State University.

What is appealing to you being a researcher?

Being a researcher is a great pleasure, and at the same time a hard work. Most of the time the researcher is under stress.

"One thing which I like most in my work is the demand for regularly learning new things"

When a new problem or challenge is formulated, it takes time, and sometimes a lot of time, to find a solution. All this time is full with hard work,



Rr. Dr. Oleg ILIEV

is a senior scientist at ITWM and Adjunct Professor at the Faculty of Mathematics at the Technical University of Kaiserslautern.

With more than 30 years of experience in Mathematical Modeling and Computer Simulation for academic research and solving industrial problems, he coordinates ITWM's participation in the XERIC project and participates in the work on most of the tasks assigned to ITWM.

Date of interview: November 2017 Publication: November 2017 individually or in teams, and for long periods it may look like no solution will be found. However, nothing can be compared to the exiting moment when a solution is found.

My favorite subject is mathematical modeling and computer simulation of industrial and environmental processes, especially in the case of multiscale and multiphysics problems. This is a rather broad subject, but unlike some colleagues in the University who can work all the life on one problem, my work requires collaboration with various industries on various processes and materials.

"With the creative and collaborative efforts of all involved partners, the bottlenecks are overcome"

What does your daily job look like?

The things which I like most in my work are the demand for regularly learning new things, the chance to work with young people, and the satisfaction to see how the industry is becoming more and more integrated with the research.

I cannot say that I have a typical day or week, but I have typical activities. The main ones are research on a new challenge or writing papers, project work or writing proposals/offers/reports, meetings with industrial and project partners, meetings with the students and postdocs, participation in conferences. "Nothing can be compared to the exiting moment when a solution is found"

What excites you in the XERIC project?

I came in the project via contact with GVS and Genoa team. I have seen that a lot of preliminary work was already done, and the developments are mature for design, manufacturing of prototypes and testing.

The XERIC idea was exciting, the involved partners were highly competent, I saw that ITWM competence can really help in this project, so I jumped into the proposal preparation.

"My favorite subject is mathematical modeling and computer simulation of industrial and environmental processes"

What are, according to you, the major challenges to be overcome in XERIC?

Several challenges have been overcome, despite they required significant work. For example, in certain moment the situation with the design of the small prototype was critical. However, with the creative and collaborative efforts of all involved partners, the bottlenecks were overcome. A big remaining challenge is the manufacturing of the required number of prototypes on a time schedule allowing their thorough testing.

"The XERIC idea was exciting, the involved partners were highly competent, I saw that ITWM competence can really help in this project, so I jumped into it."

Are you participating in other international projects? Can you talk about them and explain the role you play?

I am participating in several other national and international projects, and the role I play there is similar to the role I play in Xeric, just the processes/subjects and the challenges are different.

Thanks for your time Oleg. All the best for XERIC and your other projects!

Oleg's skills

Computer simulation; Mathematical modeling; Algorithms; Multiscale and multiphysics problems, Industrial filtration, Li-ion battery, Flow in porous media, CFD.

FRAUNHOFER - ITWM, a partner in the XERIC project

The Fraunhofer Institute for Industrial Mathematics (ITWM - Germany) is one of the more than 60 institutes of the Fraunhofer Society for applied research. The ITWM has gained a high reputation in mathematical research for industrial and commercial applications.

ITWM's participation in XERIC is mainly driven by the department of Flow and Material Simulation (about 30 employees). ITWM is responsible for the design of a small scale prototype of the climate control system. ITWM is also involved in modelling efforts aiming at understanding, quantifying and thus preventing frost formation.

XERIC in brief

XERIC is a European Research & Innovation Project Start date: 1st June 2015 End date: 31st May 2018

> Number of partners: 8

Coordinator: Dr. Eng. S. GAETA GVS spa, Italy

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