N E W S R E L E A S E

Wilfrid Laurier
University

New Laurier professor awarded Canada Research Chair

Roderick Melnik will establish computational science, modelling and visualization lab

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WATERLOO – A world expert in applied and computational mathematics is moving to Canada to establish a computational science, modelling and visualization lab at Wilfrid Laurier University. Roderick Melnik has been awarded a Tier 1 Canada Research Chair in Mathematical Modelling worth $1.4 million – $200,000 over seven years.

"The faculty of science is very pleased to have Dr. Melnik take up the Canada Research Chair in Mathematical Modelling," said Arthur Szabo, dean of science. "The department of mathematics has a strong international reputation for its research activities and was one the important factors in attracting Dr. Melnik to Laurier. Dr. Melnik is an internationally recognized scientist and his research program will enhance the department's research reputation."

Melnik's expertise is in mathematical modelling and computational sciences. Using mathematical language and computational methods, researchers can model systems – simple or complex, large or small – and then simulate experiments on them. This approach is quicker, better and less expensive than actually performing the real experiment, and there is no risk of damaging the systems during experiments. The approach allows researchers to more easily explore the effect of different experimental conditions and behaviours.

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This research is increasingly important in understanding existing natural phenomena like climate change and in building better man-made systems such as automotive valves and brakes, sensors and actuators. The findings should prove useful in several areas, including environmental and energy-saving technologies, biomedicine, nanotechnology and optoelectronics. They could lead to a broad range of applications, from space travel simulations and artificial limb fittings to solar panel and microprocessor design.

The research spans the traditional disciplinary boundaries between mathematics, science and technology, and is well suited to the multidisciplinary nature of Laurier's research programs.

"Laurier has a solid basis of high-quality undergraduate education," said Melnik. "While the science graduate programs are largely under development, I feel that Laurier has the prospect of becoming one of the best universities in terms of both undergraduate and graduate education. I look forward to contributing substantially to this growth process."

Melnik has also been awarded $74,970 from the Canada Foundation for Innovation Infrastructure Fund for computational facilities, which will be part of the new modelling and visualization lab. The facilities will provide Laurier with high-end visualization in mathematical modelling of complex nonlinear phenomena.

An applied mathematician with 15 years of academic and scientific industrial research experience, Melnik is coming to Laurier from Louisiana Technical University where he was a professor in computational analysis and modelling program. He remains associated to the Mads Clausen Institute at University of Southern Denmark (Syddansk University) where he was a professor and head of mathematical modelling. Prior to that position, he was senior mathematician at the Commonwealth Scientific and Industrial Research Organization in Sydney, Australia.

Melnik received his PhD in computational mathematics from Kiev State University (Taras Shevchenko University of Kiev) in the former Soviet Union in 1989. He has been an elected fellow of the Institute of Mathematics and its Applications in the United Kingdom since 1998 and is an invited member of the New York Academy of Sciences. His work at Laurier will involve significant collaboration with other researchers across North America, and in Australia and Europe.

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