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## VISITING PROGRAM

# TSVP TALK

# Practical Asymptotics for Science and Technology

**2026 THU. Jan. 29**

**15:00–16:00**

**HYBRID** L5D23, ZOOM

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Practical asymptotics is an effective tool for reducing the complexity of large-scale applied mathematical models arising in engineering, physics, chemistry, and industry, without compromising their accuracy. It exploits the full potential of the dimensionless representation of these models by considering the special nature of the characteristic dimensionless quantities. It can be argued that these dimensionless quantities mostly assume extreme values, particularly for practical parameter settings. Thus, otherwise complicated models can be rendered far less complex and the numerical effort to solve them is greatly reduced; asymptotics also provides a fuller understanding of the underlying problems. In this talk, I will give some examples of applications where this approach has helped me: electrochemical pickling of steel, vanadium redox flow cells, pharmaceutical freeze-drying and moving-bed reactors.


University of Limerick

## Michael Vynnycky


Michael Vynnycky is a Full Professor in Applied Mathematics at the University of Limerick in Ireland and Affiliated Professor in the Department of Materials Science and Engineering at KTH Royal Institute of Technology in Stockholm, Sweden. He received his Ph. D. from Oxford University in 1991. His primary research interests lie in the deterministic mathematical modelling of natural and industrial processes, involving the use of asymptotic and numerical methods applied to highly coupled systems of non-linear partial differential equations. He is the author of more than 150 peer-reviewed journal publications.

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