



# **Numerical Modeling of Water Flow and Solute Transport in Soils Using HYDRUS (including Preferential Flow, Colloid-Facilitated Solute Transport, and Various Biogeochemical Processes)**

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## **Short description of the lecture:**

Modern human society uses an unprecedented number of chemicals, such as in plant and animal production, making agriculture one of the most important sources for non-point source pollution. Many mathematical numerical models evaluating the fate and transport of these chemicals were developed over the last three or four decades, and these models are now readily available and widely used. In this presentation I will first briefly review different types of mathematical models that can be used to evaluate fate and transport of various chemicals in the environment, with a special focus on numerical models. Then I will review various versions of the HYDRUS models modeling water flow, chemical movement, and heat transport through variably-saturated soils. I will also discuss various specialized HYDRUS modules intended to simulate processes not available in the standard HYDRUS versions.

## **Contents:**

- Overview of mathematical models describing flow, mass and heat transport in soils
- Numerical solution using HYDRUS software
- Multiple interacting solutes
- Preferential flow
- Colloid-facilitated solute transport
- Wetland processes
- Transport of fumigants



<b>Terminy wykładów</b>			
<b>Data</b>	<b>Dzień tyg.</b>	<b>Godzina</b>	<b>Sala</b>
2015-09-07	Pn	9.15-14.00	Hydro P1
2015-09-08	Wt	9.15-14.00	Hydro P1
2015-09-09	Śr	9.15-14.00	Hydro P1