



Univerzita Karlova v Praze, Přírodovědecká fakulta

**Sekce chemie PřF UK v Praze
zve všechny zájemce na přednášku z cyklu**

Quo Vadis Chemie

Tracking Chemical Plumes

kterou přednese

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Abstrakt

Chemical leaking from a source creates a plume in a turbulent stream of water¹. Location of such source is important for various reasons. Some aquatic animals have evolved a complex strategy for location and navigation in chemical plumes, in order to find food, mates or to avoid predators. The purpose of our study has been to define the fundamental principles involved in such search strategy and to adopt them for engineered searchers (robots) used to locate objects in water. It appears that at least in the near field, close to the source, a possible strategy could be based on correlation analysis of the fluctuating chemical signal acquired by an array of sensors rationally located in space^{2,3}. This is a story of our successful project, which was inspired by a blue crab, defined by Californian realtors and funded by DARPA. It provides an interesting insights into some bizzare aspects of US reseach funding.

[1] Weissburg, M.J., Dusenbery, D.B., Ishida, H., Janata, J., Keller, T., Roberts, P.J.W., and Webster, D.R., *Environmental Fluid Mechanics* 2 (2002), 65-94 “ A Multidisciplinary Study of Spatial and Temporal Scales Containing Information in Turbulent Chemical Plume Tracking”

[2] T. Kikas, D. Webster, H. Ishida and J. Janata, *Anal. Chem.*, 73 (2001) 3662–3668 “Chemical Plume Tracking, Part I: Chemical Information Encoding”

[3] R. Cantor, H. Ishida and J. Janata, *Anal. Chem.* 80 (2008) 1012-1018, “Sensing Array for Coherence Analysis of Modulated Chemical Plume”