



# Institute of Information and Communication Technologies – BAS

Seminar

*„Parallel Algorithms and Scientific Computations”*

On 8 September 2015 at 14 h. in room 218 at the Institute of Information and Communication Technologies, BAS, Acad. G. Bonchev St., Block 25 A, **Dr. Konstantinos LIOLIOS, Dipl. Environmental Engineer, M.Sc.**, will give a presentation on the following topic:

## **A computational investigation for the optimal reaction type and for geothermal effects concerning Biochemical Oxygen Demand (BOD) removal in horizontal subsurface constructed wetlands (CW)**

### **Abstract**

Constructed Wetlands (CW) are recently used in Environ. Engineer. as a good alternative solution for small settlements in order to treat municipal wastewater and to remove groundwater pollutants in contaminated soils. So it seems necessary to investigate computationally the optimal design characteristics of CW, in order to maximize their removal efficiency and keep their area and construction cost to a minimum. The main purpose of our work is, first to select the optimal type of the reaction concerning the BOD removal on the basis of available experimental results. Second, to investigate the temperature variability and to take into account the temperature dependence of the decay coefficients, in order to simulate in a more realistic way the contaminant removal and the performance of real CW. For the numerical investigation, the Visual MODFLOW computer code is used, where finite-difference techniques are applied for the spatial and temporal discretization of the partial differential equations system.