



ΙΔΡΥΜΑ ΤΕΧΝΟΛΟΓΙΑΣ ΚΑΙ ΕΡΕΥΝΑΣ

ΕΡΕΥΝΗΤΙΚΟ ΙΝΣΤΙΤΟΥΤΟ ΧΗΜΙΚΗΣ ΜΗΧΑΝΙΚΗΣ
ΚΑΙ ΧΗΜΙΚΩΝ ΔΙΕΡΓΑΣΙΩΝ ΥΨΗΛΗΣ ΘΕΡΜΟΚΡΑΣΙΑΣ

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ΣΕΜΙΝΑΡΙΟ

- ΟΜΙΛΗΤΗΣ:** Dr. Albert Podgórski
Department of Chemical and Process Engineering
Warsaw University of Technology
- ΘΕΜΑ:** **MODELLING OF DEPOSITION AND FILTRATION OF AEROSOL PARTICLES**
- ΤΟΠΟΣ:** Αίθουσα Σεμιναρίων ΙΤΕ/ΕΙΧΗΜΥΘ
- ΗΜΕΡΟΜΗΝΙΑ:** Δευτέρα, 26 Μαΐου 2003
- ΩΡΑ:** 19:00

ΠΕΡΙΛΗΨΗ

1. Introduction – classical theory of the depth filtration of aerosols in fibrous filters.
2. Methods of description of the transport and deposition of aerosol particles (Eulerian and Lagrangian approaches generalised to account for variable friction).
3. Extended theory of single-fibre efficiency (verification of the independence rule for stochastic and deterministic mechanisms of deposition, effect of short-range interactions particle-collector on the deposition efficiency, particle rebound during the impact, effect of fibre inclination with respect to flow).
4. Effect of the filter structure inhomogeneity on the efficiency and pressure drop of fibrous filters.
5. Nonsteady-state filtration (microscopic and macroscopic model of a filter loading, experimental verifications, empirical correlations).
6. Optimisation of aerosol filtration (realistic criteria for evaluation of the filter quality, optimal filter service life, optimisation of a filter structure – graded media).
7. Review of instrumentation for experimental studies of aerosol filtration at the Department of Chemical Engineering, Warsaw University of Technology.

Albert Podgórski, PhD, DSc, born in 1963 in Poland. 1988 - MSc in chemical engineering (thesis: Dynamics of pulmonary surfactant), Warsaw University of Technology (WUT), 1991 – PhD in chemical engineering (thesis: Clearance phenomena in the human respiratory system), WUT, 2002 – DSc in chemical engineering (thesis: Transport, deposition and filtration of aerosol particles in fibrous filters), WUT. Since 1988 scientist and lecturer at the Department of Chemical and Process Engineering at the Warsaw University of Technology, currently – assistant professor, lectures on Chemical Engineering, Fundamental Processes and Downstream Processing in Biotechnology.

Scientific interests: interfacial phenomena, dynamics of pulmonary surfactant, particle deposition and clearance in the lung, inhalation of medical aerosols, mechanics of aerosol particles including deformable fibres, aerosol filtration, mathematical modelling, experimental techniques for aerosol generation and characterisation. Author or co-author of more than 150 scientific papers and 3 patents. Research fellow at the Lund University of Technology, Sweden (1993), Delft University of Technology, The Netherlands (postdoc, 1995/96), co-operation with the Institute of Experimental Physics, University of Vienna, Austria (1995-2003). Chairman of 3 grants financed by the (Polish) Committee for Scientific Research, 2 Strategic Governmental Projects and major researcher in many Polish research projects and in 3 international projects. Laureate of several scientific awards (2 times scientific Award of the Polish Ministry of Science and Education, Award of the Foundation for Polish Science, Award of the Rockefeller Foundation (USA), elected as the active member of the New York Academy of Sciences). Member of American Association of Aerosol Research, International Society for Aerosols in Medicine and Gessellschaft fuer Aerosol Forschung (Germany).