



**Seminarium Zakładu Energetyki Jądrowej i Analiz Środowiska (UZ3)  
Departament Badań Układów Złożonych (DUZ)**

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**Modelling of bioaerosols spreading in air indoor and outdoor**

**Abstrakt:**

Bioaerosol present in indoor air usually contains pathogenic microorganisms causing human and farm animals infections. They also damage materials such as wood, leather, glass, textiles, plastics, stone and building materials, but also metals and their alloys. Bioaerosols contain viruses, bacteria particles, fungi, spores and conidia, enzymes, bacterial and fungal toxins, fragments of cell covers and allergens such as plant pollen. The air contains dust, drops of water and other liquids, fibres and various organic and inorganic pollutants as components other than biological ones. The composition of bioaerosol depends on many environmental factors and varies in time and space. The molecules of microorganisms, such as bacteria, fungi, protozoa, but also virus particles, are very rarely found in the free state, but most often in the form of bioaerosols. Particles of such small size remain suspended in the air for a long time. All infectious particles smaller than 10  $\mu\text{m}$  are dangerous to human health because they are able to penetrate deep into the lungs.

Modelling of bioaerosol spread is problematic because of obligatory taking to account many various parameters, such as their fractional composition, spatial geometry, chemical and electrical properties and their transformations in a function of time and space, but also measurement methods and potential harmfulness. Regarding the kind of problem to be solved, there are a few types of models suitable for aerosol modelling.

Serdecznie zapraszamy  
Mariusz Dąbrowski, Tomasz Kwiatkowski  
<http://www.phd4gen.pl>

**Bio:**

**Ewa Kowalik-Pilarska** is a graduate of faculty of Building Services, Hydro and Environmental Engineering of Warsaw University of Technology. She graduated two specialisations: Hydrology and Environmental Protection Engineering of Climate and Atmosphere and since then she specialised in atmospheric modeling. After studies she attended an Research Internship at Hanbat National Univeristy in South Korea. She works at National Centre for Nuclear Research since 2015.