Ab initio prediction of thermal comfort and chemical breakthrough of NBC protective clothing

Project leaders
CR Kleijn

Research theme
Complex dynamics of fluids
Mathematical and computational methods for fluid flow analysis

Participants
D Ambesi

Cooperations
TNO Defence and Security

Funded
TNO Defence and Security
1st - 2nd - 3rd 100%

Start of the project
2008

Information
CR Kleijn
015 278 2835
C.R.Kleijn@TUDelft.NL
www.msp.tudelft.nl

Project Aim

The goal of this project is to develop predictive models for the protective behaviour and thermal comfort of Nuclear-Biological-Chemical protective textiles, with a special focus on chemical breakthrough. We will study air flow, heat and mass transer through the textile at multiple scales, ranging from that of the textile fibres and carbon partciles to that of an entire person, in combination with the penetration of both gaseous and liquid toxic components.

Progress

The project has started November 2008.

Dissertations

-

Scientific Publications

1. M.P. Sobera and C.R. Kleijn. T-RANS simulations of subcritical flow with heat and mass transfer past a circular cylinder surrounded by a thin porous layer. Flow, Turbulence and Combustion 80 (4), 2008, pp. 531-546.