Methods and Tools to Allow Molecular Flow Simulations to be Coupled to Higher Level Continuum Descriptions of Flows in Porous/Fractured Media and Aerosol/Dust Dynamics

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ABSTRACT

Our objectives in this project are to develop methods and tools for coupling molecular flow simulations to higher level continuum descriptions of gas/vapor flows in porous/media and aerosol/dust dynamics. In addition to being directly responsive to the Nuclear Energy University Programs (NEUP) work scope area FCMS-3, our proposed research is also directly responsive to the issues and needs identified in NUREG/CR-6944 Vol.1 (Main Report) and Vol.3 (Fission Product Transport and Dose PIRTs), 2008. The latter report has strongly emphasized the need for improved computations for porous media and aerosols where continuum descriptions, unaided by molecular-level simulations, do not suffice as the time and length scales vary over a large range.