

초고속·대용량 computing, network, visualization  
기술발전과 화재/폭발 simulation

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e-Science offers an opportunity to significantly improve the intervention in fire emergencies. CFD and FE techniques are now sufficiently advanced to accurately model the spread of a fire and its effects on structures. Time-accurate, full physics simulations of accidental fires and explosions require consideration of fundamental gas and condensed phase chemistry, structural mechanics, turbulent reacting flows, convective and radiative heat transfer, and mass transfer. It is also required to model the physical complexities from the molecular level of high energy materials, through millimeter-sized representations of the container, to the meter-sized representations of the fire spread. The Computational and Access Grids/visualization module, composing key elements of the e-Science environment, provide a computational, visualization and collaboration infrastructure that can support the multiphysics modeling, simulation and effective display of large-scale, complex phenomena. These recent advances in computing, network and visualization technologies and their contributions to fire and explosion research and simulations are discussed.