Abstract Submitted
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Modeling the Asymmetical Burning of Ultrafine Particles CLINTON RICHMOND, NSWCIHMD — A model has been developed that accounts for asymmetrical combustion effects due to oxide caps and/or other surface contaminants of burning ultrafine metal particles. The burning rate law of a particle is modified to include the effects of surface contamination. The modifications are then used in solving the Shvab-Zeldovich differential equations for diffusion of energy and chemical species within the mixing region and reaction zone. The model is validated by comparing its predictions to experiments in which asymmetrical particle combustion was observed. The model accounts for different pathological aspects of particles combustion attributed to asymmetrical burning, such as the deviation from the "D^2 law."

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