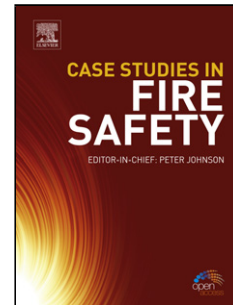


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Thermal oxidation process of in-situ silicon carbide incorporated carbon aerogel, experimental and kinetic study

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Highlights

- The silicon carbide phase was incorporated in carbon aerogel using the sol-gel polymerization.
- A 40 % decline was observed in the overall rate of oxidation of the resultant hybrid aerogel in comparison with the neat carbon aerogel.
- The global oxidation kinetics of the hybrid aerogel was found to be strongly dependent on the reaction condition due to the highly porous nature of the aerogel samples.
- A gradual shift was observed from the reaction-control to diffusion- control regimes in the kinetic scheme of the oxidation reaction by increasing the heating rate.
- Applying the NPK method on the non-isothermal thermo-gravimetric data enables one to differentiate between the rates constant values of the reaction-control and diffusion-control regimes of the oxidation reaction.

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