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IAF MATERIALS AND STRUCTURES SYMPOSIUM (C2)
Interactive Presentations - IAF MATERIALS AND STRUCTURES SYMPOSIUM (IP)

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MOISTURE INDUCED COMBUSTION AND FIRE SAFETY

Abstract

Moisture have a significant effect on the flame spreading rate of the material surfaces. Presence of moisture is an imperative parameter of controlling and governing nature for terrestrial and extra-terrestrial operations. The phenomenon is strongly observed to have an inter-relation with combustible materials and flame spreading. One aspect of fire safety that is yet to be comprehensively investigated is the role of moisture in extreme cases of fire break outs. Although, there have been many studies on the effect of moisture, the quantification of the particular thing needs to be done.

Present work focuses on the thorough experimentation on the moisture induced combustion of thin solid fuel sheets to explore the effect of moisture on the spread rate of the diffusion flames. Proportional moisture is uniformly induced into the the fuel sheets with time and the pilot fuel is ignited to note the moisture effect. The values are duly compared with the one without moisture. The key controlling parameters are moisture concentration, operating time, flame spreading rate. The data obtained from the experiments is used to obtain the Material Flammability Curve(MFC), to predicts the limits of combustibility of the particular fuel. The physical insight from the present work would be very useful to supervise the effect of moisture on the spread rate of fires that occur in outer space such as space stations.