# SURFACE BURNING IN A VOLUMETRIC FOAM METAL MATRIX WITH THE CERAMIC COATING

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**Abstract:** Characteristics of the surface burning in a volumetric foam metal matrix with the ceramic coating were studied. The matrix surface was coated with ceramic film (alumina) of the thickness $\sim$ 200 $\mu$m by using the detonation dusting method. It was shown that coating with the lower optical transparency and heat conductivity led to immersing the flame front into the matrix and growing the effective temperature of the surface layer. The position of the flame front is stabilized in the undersurface layer because of the radiation losses increase due to high radiation ability of the matrix material and transparency of the ceramic covering in a wide infrared radiation spectrum. The temperature of the back matrix side follows the matrix surface temperature and it is 70–80 K higher for the matrix with coating in the considered range of changing the firing rate. Reduction of the nitrogen oxides concentration in the combustion products up to 2–3 times at the firing rate of 30 W/cm$^2$ was observed.

**Keywords:** burning limits; radiation burners; surface burning

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