

## Flame quenching process in cavity based on model scramjet combustor

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Abstract

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**Abstract** The flame quenching process in combustors was observed by high speed camera and Schlieren system, at the inflow conditions of  $Ma=2.64$ ,  $T_0=1483K$ ,  $P_0=1.65MPa$ ,  $T=724K$  and  $P=76.3kPa$ . Changing process of the flame and shock structure in the combustor was clearly observed. The results revealed that the precombustion shock disappeared accompanied with the process in which the flame was blown out and withdrawn from the mainflow into the cavity and vanished after a short while. The time of quenching process was extended by the cavity flame holder, and the ability of flame holding was enhanced by arranging more cavities in the downstream as well. The flame was blown from the upstream to the downstream, so the flame in the downstream of the cavity was quenched out later than that in the upstream.

**Keywords:** Flame quenching process Cavity Model scramjet combustor

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