

# Readers' Forum

Brief discussions of previous investigations in the aerospace sciences and technical comments on papers published in the AIAA Journal are presented in this special department. Entries must be restricted to a maximum of 1000 words, or the equivalent of one Journal page including formulas and figures. A discussion will be published as quickly as possible after receipt of the manuscript. Neither the AIAA nor its editors are responsible for the opinions expressed by the correspondents. Authors will be invited to reply promptly.

## Comment on "Theoretical Prediction of Erosive Burning Characteristics of Solid Rocket Propellant"

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FOR clarity, it is suggested that the following two parameters be added to Ref. 1:

$$B_x \equiv \frac{2e_s r}{c_{f0x} eu} \quad b \equiv \frac{2e_s r}{c_{f0} eu}$$

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where  $c_{f0}$  is the drag coefficient at the prescribed condition but in the absence of density variations, longitudinal pressure gradient, and mass transfer.

Thus, the original Eqs. (2-6) of Ref. 1 may be rewritten as (for  $\psi = 1$ ):

$$B_{xcr} = b_{cr} / (1 + 0.25b_{cr})^{0.2}$$

Strictly speaking, however, this is incorrect, because for  $\psi \neq 1$  the following expression should be used:

$$B_{xcr} = b_{cr} / b_{cr}^{0.1} = b_{cr}^{0.9}$$

### References

<sup>1</sup> Jojić, B. and Blagojević, Dj., "Theoretical Prediction of Erosive Burning Characteristics of Solid Propellant," *AIAA Journal*, Vol. 15, April 1977, pp. 461-462.

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## COMBUSTION EXPERIMENTS IN A ZERO-GRAVITY LABORATORY—v. 73

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Scientists throughout the world are eagerly awaiting the new opportunities for scientific research that will be available with the advent of the U.S. Space Shuttle. One of the many types of payloads envisioned for placement in earth orbit is a space laboratory which would be carried into space by the Orbiter and equipped for carrying out selected scientific experiments. Testing would be conducted by trained scientist-astronauts on board in cooperation with research scientists on the ground who would have conceived and planned the experiments. The U.S. National Aeronautics and Space Administration (NASA) plans to invite the scientific community on a broad national and international scale to participate in utilizing Spacelab for scientific research. Described in this volume are some of the basic experiments in combustion which are being considered for eventual study in Spacelab. Similar initial planning is underway under NASA sponsorship in other fields—fluid mechanics, materials science, large structures, etc. It is the intention of AIAA, in publishing this volume on combustion-in-zero-gravity, to stimulate, by illustrative example, new thought on kinds of basic experiments which might be usefully performed in the unique environment to be provided by Spacelab, i.e., long-term zero gravity, unimpeded solar radiation, ultra-high vacuum, fast pump-out rates, intense far-ultraviolet radiation, very clear optical conditions, unlimited outside dimensions, etc. It is our hope that the volume will be studied by potential investigators in many fields, not only combustion science, to see what new ideas may emerge in both fundamental and applied science, and to take advantage of the new laboratory possibilities.

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