

Abstract Submitted  
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**Development of Anodized-Aluminum Temperature-Sensitive Paint for Flow Field Measurements** AKIHISA AIKAWA, Kyushu University, HIROTAKA SAKAUE, JAXA — Anodized-aluminum temperature-sensitive paint (AA-TSP) is developed to capture the flow fields related to the temperature. Instead of using conventional polymer type TSP, the anodized-aluminum coating can hold material properties from cryogenic to high temperatures limited by its melting point of  $\sim 930$  K. We studied various luminophores onto this coating as a global temperature sensor. Six different quantum dots, which varied the luminescent peak wavelengths, are applied onto this coating. Rhodamine-B, pyronin B, pyronin Y, and europium complex are studied, which are also good candidates as the temperature sensing probes. The temperature calibrations of the developed AA-TSP are shown. The temperature is varied from 100 to 500 K. The temperature sensitivities of the developed AA-TSPs are related to the temperature range calibrated. Comparisons of the AA-TSPs related to the sensitive temperature range are included. A global temperature measurement in a hypersonic wind tunnel is shown as a demonstration of the developed AA-TSPs.

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