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Thermal-Stability Characterization of Quantum Dot on Anodized Aluminum as Global Temperature Sensing HIROTAKA SAKAUE, JAXA, AKIHISA AIKAWA, Kyushu University — Quantum dot (QD) is an attractive chemical as a temperature-sensitive probe for global temperature sensor. It is bright and has a narrow spectrum compared to those of conventional temperature-sensitive probes. Previous studies show that QD on anodized-aluminum support is applied to high temperature measurement (above 400 K) in hypersonic flows. However, it is also reported that QD is not stable at this temperature range. To answer to the stability issue, we characterize a thermal stability of a QD on anodized-aluminum support. The luminescence from the resultant sensor is measured in the temperature range of 100 to 475 K and the time range of 0 to 1000 s. It is shown that the thermal stability is hold below 298 K. Above 315 K, a sudden decrease and a recovery of the luminescence are measured. It is found that the amount of decrease is proportional to the temperature. The maximum decrease in the intensity is 89% at 475 K after 1000 s. At 315 K, the intensity is recovered to the initial amount after 1000 s.

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