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Freezing Behavior of a Supercooled Water Droplet Impacting on Surface Using Dual-Luminescent Imaging Technique MIO TANAKA, Tokyo University of Science, KATSUAKI MORITA, Japan Aerospace Exploration Agency, MAKOTO YAMAMOTO, Tokyo University of Science, HIROTAKA SAKAUE, University of Notre Dame — A collision of a supercooled-water droplet on an object creates ice accretion on its surface. These icing problems can be seen in any cold environments and may lead to severe damages on aircrafts, ships, power cables, trees, road signs, and architectures. To solve these problems, various studies on ice-prevention and ice-prediction techniques have been conducted. It is very important to know the detail freezing mechanism of supercooled water droplets to propose or improve those techniques. The icing mechanism of a single supercooled-water droplet impacting on object surface would give us great insights for constructing those techniques. In the present study, we use a dual-luminescent imaging technique to measure the time-resolved temperatures of a supercooled water droplet impacting with different speed. The technique we applied consists of high-speed color camera and two luminescent probes. We will report the current status of this experiment in the presentation.

Mio Tanaka
Tokyo University of Science

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