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Global Oxygen Sensing and Visualization in Water using Luminescent Probe on Anodized Aluminum TATSUYA OZAKI, HITOSHI ISHIKAWA, Tokyo University of Science, YOSHIMI IJIMA, HIROTAKA SAKAUE, JAXA — The extension of pressure-sensitive paint (PSP) technique as a wind tunnel technology to a global oxygen visualization and detection in water is presented. The topic includes the development of anodized-aluminum pressure-sensitive paint (AA-PSP) as a global oxygen sensor in water as well as its calibration and demonstration. Based on the luminophore study, platinum porphyrin is selected as a luminophore, because it is not dissolved in water. It is found that the luminescent increase is over 20 percent after 8 days immersed in water. Even though the signal increases after water immersion, its oxygen sensitivity is the same, which is 0.4. This AA-PSP is used to visualize oxygen rich water (20 mg/l) impinged in less oxygen water (3 mg/l). Even though the difference of water is only the amount of oxygen, we can visualize the water jet with its mixing process using a fast frame rate camera at the frame rate of 100 Hz. In the final version, we will include the oxygen map combined with the visualization result.

Prefer Oral Session
 Prefer Poster Session

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