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**Rapid Production of Poly-N-Isopropylacrylamide with Nanopulsed Arc Discharge on Water-Argon Interface** YUSUKE HIRANO, Graduate School of Science and Technology, Kumamoto University, MITSURE SASAKI, Institute of Pulsed Power Science, Kumamoto University, SATOKO OKUBAYASHI, Department of Advanced Fibro-Science, Kyoto Institute of Tehnology, GRADUATE SCHOOL OF SCIENCE AND TECHNOLOGY, KUMAMOTO UNIVERSITY TEAM, INSTITUTE OF PULSED POWER SCIENCE, KUMAMOTO UNIVERSITY TEAM, DEPARTMENT OF ADVANCED FIBRO-SCIENCE, KYOTO INSTITUTE OF TEHNOLOGY TEAM
— Poly-(*N*-Isopropylacrylamide) is well known about an exhibition of coil-to-globule transition below the lower critical solution temperature (32°C) in aqueous media [1]. Because of this temperature near the human body, it has focused on as one of functional polymers available to industries [2]. However, the synthesis of PNIPAM has been conventionally conducted in combined harmful solvents for considerable long operating times. In this study, as a candidate technique for polymer productions, we challenged the use of pulsed discharge to the gas-liquid interface in order to generate reactive species such as radicals from water, initiator and argon gas, which can promote the radical polymerization of NIPAM and its production intermediates. We also discuss possible reaction mechanism based on the experimental results.

[1] M. Heskins, J. E. Guillet, *J. Macromol. Sci. Chem.*, **1968**, 1441.
[2] J. C. Cuggino, C. B. Contreras, A. Jimenez-Kairuz, B. A. Malettp, C. I. Alvarez Igarzabal *American Chemical Sciety*, **2014**, 11, 2239-2249.

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