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Power Control Method for Atmospheric-Pressure Plasma Generator with Electrode Array HIROYASU TAKEI, SATOSHI KURIO, SATOSHI MATSUYAMA, KAZUTO YAMAUCHI, YASUHISA SANO, Osaka Univ, DEPARTMENT OF PRECISION SCIENCE AND TECHNOLOGY, GRADUATE SCHOOL OF ENGINEERING, OSAKA UNIVERSITY TEAM, RESEARCH CENTER FOR ULTRA-PRECISION SCIENCE AND TECHNOLOGY, GRADUATE SCHOOL OF ENGINEERING, OSAKA UN TEAM — In semiconductor, oxide material, and optical element processing, the processing time must be precisely controlled in each area, and the throughput needs to be reduced. Therefore, we proposed a numerically controlled sacrificial atmospheric-pressure plasma oxidation process and experimentally produced an atmospheric-pressure plasma generator with an electrode array. In this paper, we experimentally produced an atmospheric-pressure plasma generator with an electrode array and conducted NC plasma oxidation experiments. In the proposed NC sacrificial oxidation process, it is necessary to control the power so as to maintain a constant oxidation rate, because the plasma area changes during processing. Therefore, we demonstrated effective monitoring of the electrode voltage for this purpose. Finally, we successfully formed oxide films with nanometer thickness accuracy. We expect that this finding will contribute to improving the accuracy of various plasma processes in the future.

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