

Abstract Submitted
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Measurement of Ground State Oxygen Radical [O(³P)] in Surface Cleaning Process Employing Nonequilibrium Atmospheric-Pressure Pulsed Remote Plasma MASAHIRO IWASAKI, KEIGO TAKEDA, MASARU HORI, Department of Electrical Engineering, Nagoya University, MASAFUMI ITO, Faculty of Systems Engineering, Wakayama University, EIJI MIYAMOTO, TAKUYA YARA, TSUYOSHI UEHARA, Sekisui Chemical Co., Ltd. — Plasma surface cleaning technology using the nonequilibrium atmospheric-pressure plasma has the advantages of non-vacuum system, high throughput, and scalability for large area in-line processing. In this study, the surface cleaning on an indium tin oxide film was investigated by using a nonequilibrium atmospheric-pressure pulsed plasma. It was found that a remarkably high cleaning efficiency was realized by plasma treatment with additions from 0.025 to 0.1% O₂ to N₂. The densities of the ground state oxygen radical [O(³P)] and ozone [O₃] were measured using vacuum UV laser absorption spectroscopy and UV absorption spectroscopy, respectively. It was found that the key factor for the surface cleaning was the scission of carbon bonds of organic compounds due to UV emissions, and subsequent oxidation due to O(³P) and O₃.

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