Abstract Submitted
for the GEC19 Meeting of
The American Physical Society

Nitrogen Concentration near Anode Affected by Convective Mass Transfer Flux of Arc in Atmospheric Pressure YOSHIFUMI MAEDA, YUSUKE NEMOTO, ZHENWEI REN, TORU IWAO, Tokyo City University — Gas shielded arc welding is widely used because of the simplicity and high productivity. This welding method has advantages such as the protection of the arc from monatomic gas of the atmosphere using the sheilding gas, and the high quality welding is possible. However, a shielding gas flows downwind and the arc is deflected in strong winds. Hence, the blow hole may occur because the nitrogen from the atmosphere is contaminated into the melted metal. In order to prevent this problem, it is necessary to elucidate the process of nitrogen contamination into the arc caused by the crosswind. It has been reserached that the observation of the nitrogen contamination process caused by crosswinds using the Schlieren method. However, the nitrogen contamination phenomenon in the arc has not been clarified because of the high radiation power density from the arc. Therefore, it is required to investigate numerically the nitrogen contamination process in the arc caused by the crosswind. In this study, the nitrogen concentration near anode affeced by the convective mass trasnfer flux of arc in atmospherice pressure was elucidated. As a result, the nitrogen concentration near anode increased with increasing the convective mass transfer flux of arc.

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Date submitted: 07 Jun 2019 Electronic form version 1.4