

SHORT COMMUNICATION

DECREASE IN FULLERENE PRODUCTIVITY DUE TO AIR LEAKAGE IN CARBON ARC METHOD

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Abstract: Fullerene productivity was investigated in the carbon arc discharge method when air was deliberately introduced into He-filled arc apparatus. Values of fullerene yield and production rate did not vary until the air leakage rate, defined as an increase in the ratio of air partial pressure relative to He pressure, was 0.2%/min. Fullerene productivity drastically decreased when the air leakage rate increased above 0.2%/min. Emission spectroscopic measurement of the arc plasma suggested the possibility that this decrease in productivity was related to an increase in the formation of carbon-air combined molecular species, *e.g.*, CN, in the plasma.

1. Introduction

Fullerene can be produced by such methods as laser ablation ⁽¹⁾, resistive heating ^{(2), (3)}, RF inductive heating ⁽⁴⁾, arc discharge ^{(5),(6)}, and combustion ⁽⁷⁾. The most effective and practical method is a carbon arc discharge between graphite electrodes. Since the apparatus is rela-

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