



US 20230230818A1

- (19) **United States**
(12) **Patent Application Publication** (10) **Pub. No.: US 2023/0230818 A1**
Inada et al. (43) **Pub. Date: Jul. 20, 2023**

(54) **SUBSTRATE PROCESSING APPARATUS,
METHOD OF MANUFACTURING
SEMICONDUCTOR DEVICE AND NON-
TRANSITORY COMPUTER-READABLE
RECORDING MEDIUM**

Publication Classification

- (51) **Int. Cl.**
H01J 37/32 (2006.01)
- (52) **U.S. Cl.**
CPC *H01J 37/32834* (2013.01); *H01J 37/321*
(2013.01); *H01J 37/32449* (2013.01); *H01J*
37/32522 (2013.01); *H01J 37/32743*
(2013.01); *H01J 2237/182* (2013.01); *H01J*
2237/186 (2013.01); *H01J 2237/188*
(2013.01); *H01J 2237/334* (2013.01);
H01J 2237/24585 (2013.01)

(71) Applicant: **Kokusai Electric Corporation**, Tokyo
(JP)

(72) Inventors: **Tetsuaki Inada**, Toyama-shi (JP); **Junya
Konishi**, Toyama-shi (JP); **Masaki
Murobayashi**, Toyama-shi (JP); **Takeshi
Yasui**, Toyama-shi (JP); **Takeo Sato**,
Toyama-shi (JP)

(73) Assignee: **Kokusai Electric Corporation**, Tokyo
(JP)

(21) Appl. No.: **18/183,090**

(22) Filed: **Mar. 13, 2023**

Related U.S. Application Data

(63) Continuation of application No. PCT/JP2021/
035034, filed on Sep. 24, 2021.

Foreign Application Priority Data

Sep. 29, 2020 (JP) 2020-163933

(57) **ABSTRACT**

According to one aspect of the technique of the present disclosure, there is provided a substrate processing apparatus including: a process vessel in which a substrate is processed; an outer vessel configured to cover an outer circumference of the process vessel; a gas flow path provided between the outer vessel and the outer circumference of the process vessel; an exhaust path in communication with the gas flow path; an adjusting valve configured to be capable of adjusting a conductance of the exhaust path; a first exhaust apparatus provided on the exhaust path downstream of the adjusting valve; a pressure sensor configured to measure an inner pressure of the outer vessel; and a controller configured to be capable of adjusting an exhaust volume flow rate of the first exhaust apparatus by controlling the first exhaust apparatus based on a pressure measured by the pressure sensor.

