



US 20240213000A1

(19) **United States**(12) **Patent Application Publication**  
**NAGASEKI et al.**(10) **Pub. No.: US 2024/0213000 A1**(43) **Pub. Date: Jun. 27, 2024**(54) **PROCESSING METHOD AND PLASMA  
PROCESSING APPARATUS****Publication Classification**(71) Applicant: **Tokyo Electron Limited**, Tokyo (JP)(72) Inventors: **Kazuya NAGASEKI**, Miyagi (JP);  
**Kazuki MOYAMA**, Miyagi (JP);  
**Shinji HIMORI**, Miyagi (JP);  
**Masanobu HONDA**, Miyagi (JP);  
**Satoru TERUUCHI**, Miyagi (JP)(51) **Int. Cl.****H01J 37/32** (2006.01)**H01L 21/683** (2006.01)(52) **U.S. Cl.****CPC .... H01J 37/32724** (2013.01); **H01J 37/3244**  
(2013.01); **H01L 21/6833** (2013.01); **H01J**  
**2237/2065** (2013.01)(73) Assignee: **Tokyo Electron Limited**, Tokyo (JP)(21) Appl. No.: **18/421,988**(22) Filed: **Jan. 25, 2024****Related U.S. Application Data**(63) Continuation of application No. PCT/JP2022/  
029017, filed on Jul. 27, 2022.(30) **Foreign Application Priority Data**

Aug. 3, 2021 (JP) ..... 2021-127644

(57)

**ABSTRACT**

A processing method for performing plasma processing on a substrate includes placing a temperature adjustment target onto a support surface of a substrate support in a decompressible processing, forming a heat transfer layer by supplying, through the substrate support, a heat transfer medium including at least one of a liquid medium or a solid medium with fluidity to between the support surface of the substrate support and a back surface of the temperature adjustment target, performing plasma processing on the substrate on the support surface on which the heat transfer layer is formed, and separating the temperature adjustment target from the support surface after the plasma processing.

