



US 20230230859A1

(19) **United States**(12) **Patent Application Publication**
TANNOUS et al.(10) **Pub. No.: US 2023/0230859 A1**(43) **Pub. Date: Jul. 20, 2023**(54) **BATCH THERMAL PROCESS CHAMBER****Publication Classification**(71) Applicant: **Applied Materials, Inc.**, Santa Clara, CA (US)(72) Inventors: **Adel George TANNOUS**, Santa Clara, CA (US); **Schubert S. CHU**, San Francisco, CA (US); **Shu-Kwan LAU**, Sunnyvale, CA (US); **Kartik Bhupendra SHAH**, Saratoga, CA (US); **Zuoming ZHU**, Sunnyvale, CA (US); **Ala MORADIAN**, Sunnyvale, CA (US); **Surajit KUMAR**, San Jose, CA (US); **Srinivasa RANGAPPA**, Bangalore (IN); **Chia Cheng CHIN**, Fremont, CA (US); **Vishwas Kumar PANDEY**, Madhya Pradesh (IN)(51) **Int. Cl.****H01L 21/67** (2006.01)**H01L 21/687** (2006.01)**H05B 3/00** (2006.01)(52) **U.S. Cl.**CPC .. **H01L 21/67115** (2013.01); **H01L 21/67184** (2013.01); **H01L 21/6719** (2013.01); **H01L 21/68771** (2013.01); **H05B 3/0047** (2013.01)

(57)

ABSTRACT

A batch processing chamber and a process kit for use therein are provided. The process kit includes an outer liner having an upper outer liner and a lower outer liner, an inner liner, and a top plate and a bottom plate attached to an inner surface of the inner liner. The top plate and the bottom plate form an enclosure together with the inner liner, and a cassette is disposed within the enclosure. The cassette including shelves configured to retain a plurality of substrates thereon. The inner liner has inlet openings disposed on an injection side of the inner liner and configured to be in fluid communication with a gas injection assembly of a processing chamber, and outlet openings disposed on an exhaust side of the inner liner and configured to be in fluid communication with a gas exhaust assembly of the processing chamber. The inner surfaces of the enclosure comprise material configured to cause black-body radiation within the enclosure.

(21) Appl. No.: **17/919,911**(22) PCT Filed: **Jul. 12, 2021**(86) PCT No.: **PCT/US2021/041287**

§ 371 (c)(1),

(2) Date: **Oct. 19, 2022**(30) **Foreign Application Priority Data**

Aug. 3, 2020 (IN) 202041033208

