

CHAMBER EFFLUENT MONITORING SYSTEM AND SEMICONDUCTOR
PROCESSING SYSTEM COMPRISING ABSORPTION SPECTROSCOPY
MEASUREMENT SYSTEM, AND METHODS OF USE

Abstract

Provided is a novel chamber effluent monitoring system. The system comprises a chamber having an exhaust line connected thereto. The exhaust line includes a sample
5 region, wherein substantially all of a chamber effluent also passes through the sample region. The system further comprises an absorption spectroscopy measurement system for detecting a gas phase molecular species. The measurement system comprises a light source and a main detector in
10 optical communication with the sample region through one or more light transmissive window. The light source directs a light beam into the sample region through one of the one or more light transmissive window. The light beam passes through the sample region and exits the sample region
15 through one of the one or more light transmissive window. The main detector responds to the light beam exiting the sample region. The system allows for *in situ* measurement of molecular gas impurities in a chamber effluent, and in particular, in the effluent from a semiconductor processing
20 chamber. Particular applicability is found in semiconductor manufacturing process control and hazardous gas leak detection.

Figure 1A

