

Airborne Molecular Contamination (AMC): An Emerging Issue

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Contamination control within semiconductor manufacturing facilities has traditionally focused on particulate control. The implementation of front opening unified pods (FOUPs) and mini-environments has allowed for a relaxation in the cleanroom operating class to class 10 or class 100.

In sharp contrast, stringent controls continue to be placed on airborne molecular contaminants (AMCs). The technology drivers include increased resist sensitivity, the continuing trend to smaller and smaller geometries, thinner oxide layers, and increased sensitivity of process tools.

The AMC levels within a cleanroom are dependent on external environmental contamination, cleanroom design, construction materials and the process tools. Chemical filtration is no longer being used solely for odor control, but now is being routinely used for control of AMC levels in the cleanroom air stream.

Efforts to control AMC to a required level are hampered by the lack of available real time monitors. Additionally there is a lack of data for chemical filters at contaminant levels that are representative of cleanroom conditions.

This paper discusses AMC issues, including potential impact on site selection, 200mm to 300mm conversions, modeling efforts to predict impact of fab design on dispersion of molecular contaminant and cost impacts of AMC mitigation.