Chapter 2.32

**Glovebox for Inert Atmosphere**

(\textit{glovebox2}) \hspace{1cm} (\textit{380})

1.0 \textbf{Equipment Purpose}

1.1 Glovebox2 is a positive pressure N2 filled glove box.

2.0 \textbf{Material Controls & Compatibility}

2.1 Glovebox2 is intended for working with atmosphere sensitive materials in an inert environment, primarily for spin processing and bakeout of oxygen sensitive films.

2.2 Glovebox2 is not a recirculating glovebox, and is not appropriate for use with pyrophoric materials. Review all pyrophoric chemicals with lab management staff to obtain proper support with these processes.

3.0 \textbf{Applicable Documents}

3.1 Nanolab equipment manual - Headway2

4.0 \textbf{Definitions & Process Terminology}

4.1 Pyrophoric: Ignotes on contact with air – **glovebox2 is not appropriate for use with pyrophoric materials. glovebox2 is not appropriate for use with pyrophoric materials. Review all pyrophoric chemicals with lab management staff to obtain proper support with these processes.**

4.2 Inert environment: A space purged with N2 gas to reduce O2 content to very low levels, typically to suppress reaction with O2-sensitive chemical reagents.

5.0 \textbf{Safety}

5.1 Glovebox2 is not a recirculating glovebox, and is not appropriate for use with pyrophoric materials. Review all pyrophoric chemicals with lab management staff to obtain proper support with these processes.

6.0 \textbf{Process Data}

6.1 N/A

7.0 \textbf{Available Processes, Gases, Process Notes}

7.1 N2 backfill is constantly replenished to the pressure indicated by the upper bound of the photohelic gauge.

8.0 \textbf{Equipment Operation}

8.1 Startup

8.1.1 Enable glovebox2 on Mercury.

8.1.2 Set upper bound of photohelic gauge to 1 inch of water

8.1.2.1 N2 should fill chamber to upper pressure bound

8.2 Transferring materials into chamber
8.2.1 Set loadlock valve to vacuum to pump loadlock
8.2.2 Set loadlock valve to N2 to vent loadlock
8.2.3 Set loadlock valve to off
8.2.4 Ensure inner loadlock door is closed.
8.2.5 Open loadlock and load materials for transfer into system
8.2.6 Close loadlock.
8.2.7 Set loadlock valve to vacuum to pump loadlock until base pressure is reached.
8.2.8 Set loadlock valve to N2 to vent loadlock to atmosphere
8.2.9 Repeat the above cycle 3 times.
8.2.10 Open inner loadlock door and unload materials
8.2.11 Close inner door.

8.3 Processing
8.3.1 Take extra care not to spill materials onto the floor of glovebox2 – cleaning gloveboxes is difficult. Use aluminum foil to line the active area of any mixed chemicals.

8.4 Headway manual spinner operation
8.4.1 When operating the headway manual spinner on the left side of glovebox2, reference the headway2 manual for instructions on how to program and operate the spinner.
8.4.2 Note that glovebox2 does not have any standard spincoating recipes, so all recipes can be modified at any time. Check your recipe before running your tool
8.4.3 Never toggle the headway chuck vacuum to "manual". Doing so without a wafer will attempt to suck the nitrogen out of glovebox2, defeating the positive pressure system, potentially contaminating your samples and wasting lots of process nitrogen.

8.5 Transferring materials out of chamber
8.5.1 Set loadlock valve to vacuum to pump loadlock
8.5.2 Set loadlock valve to N2 to vent loadlock
8.5.3 Set loadlock valve to off
8.5.4 Ensure outer loadlock door is closed.
8.5.5 Open inner loadlock door and load materials for transfer out of system
8.5.6 Close loadlock.
8.5.7 Set loadlock valve to vacuum to pump loadlock until base pressure is reached.
8.5.8 Set loadlock valve to N2 to vent loadlock to atmosphere
8.5.9 Open outer loadlock door and unload materials
8.5.10 Set loadlock valve to vacuum to pump loadlock
8.5.11 Set loadlock valve to N2 to vent loadlock
8.5.12 Set loadlock valve to off

8.6 Shutdown
8.6.1 Set upper bound of photohelic gauge to zero
8.6.2 Disable the tool on mercury.

9.0 Troubleshooting Guidelines

9.1 Problem: No vacuum at chuck or load lock
9.1.1 Fix: Enable glovebox2 on mercury
9.1.2 Fix: Check vacuum pump power switch and ensure it is on.

10.0 Figures & Schematics

10.1 N/A

11.0 Appendices

11.1 N/A