

NATIONAL UNIVERSITY OF SINGAPORE

Doc No.

Type: Experiment / Equipment Activity-Based Risk Assessment Form

Name of Department Physics Location of Lab S07-01-09
 Name of Laboratory CIBA chemistry lab Name of PI Mark Breese
 Name of Researcher/LO Dang Zhiya Name of Activity/Experiment Pirahna Etching

1. Hazard Identification			2. Access the Risk				3. Risk Control			
No	Description/Details of Steps in Activity	Hazards	Possible Accident / Ill Health & Persons-at-Risk	Existing Risk Control (Mitigation)	Severity	Likelihood (Probability)	Risk Level	Additional Risk Control	Person Responsible	By (Date)
1	Prepare Pirahna solutions	1) chemical used: concentrated sulfuric acid (H2SO4) corrosive, causes eye and skin burns. May be fatal if inhaled. May cause kidney and lung damage. Hygroscopic. Strong oxidizer. Contact with other material may cause a fire. Hydrogen peroxide (H2O2), harmful by inhalation, in contact with skin and if swallowed. 2) hot surface of the containers	Acid spill, explosion could occur if the H2O2 is at 50% or greater, or the concentrated H2SO4 is added into the H2O2 first.	Users need additional protective equipment include: a full face shield, heavy duty rubber gloves. Only use glass containers(preferably pyrex). Move any organic compounds away from the fume hood which could induce fire while reacting with the solution. Only trained and authorized personnel are allowed to use the piranha etching solution.	2	1	2			
2	Removal of Protek photoresist	1. Corrosive and caustic Pirahna etching solution.	Pirahna etching solution spillage.	Wear protective equipment and only use in fume hood.	2	1	2			
3	Storage of the waste pirahna solution.	Chemical	A hot solution in a tight container might explode due to the gas generation due to the gas generation and over pressurization of the container.	Never store the hot piranha solution. Cool down the solution for several hours and dilute it before a proper storage.	2	1	2			
4							0			
5							0			
6							0			
7							0			
8							0			

Conducted By Dang Zhiya

Approved By Mark Breese
 Name Mark Breese
 Signature _____
 Approval date _____ Next Revision date _____
 (Maximum 3 years)