












<p>Date: 23.02.2021 Authorized user: T. Grottke, Dr. F. Lenzini Work area: Wet Etching Workplace: CeNTech II, 2.03</p>	<h1>Safety Instruction</h1> <h2>Wet Etching Area Hydrofluoric Acid</h2>	<p>WWU Münster Nanofabrication Facility (MNF) Center for NanoTechnology (CeNTech) Heisenbergstraße 11 48149 Münster</p>
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Range of Application		
Working at the acid fume hood		
Hazard for People and the environment		
	<ul style="list-style-type: none"> • Skin Exposure: Strong HF acid concentrations (over 50%) and anhydrous HF, cause immediate, severe, burning pain and a whitish discoloration of the skin that usually proceeds to blister formation. The usual initial signs of a dilute solution HF burn are redness, swelling and blistering, accompanied by severe throbbing pain. Solutions less than 20% may not produce symptoms for up to twenty-four hours. • Eye Contact: HF can cause severe eye burns with destruction or opacification of the cornea. Blindness may result from severe or untreated exposures. • Inhalation: Inhalation of HF vapors may cause laryngospasm, laryngeal edema, bronchospasm and/or acute pulmonary edema. The symptoms of exposure are coughing, choking, chest tightness, chills, fever, and blue skin. • Ingestion: If HF is ingested, severe burns to the mouth, esophagus and stomach may occur. Ingestion of even small amounts of dilute HF has resulted in death. <p>Time is of the essence as exposure to HF is a life-threatening emergency. Delay in first aid or medical treatment will result in greater damage or possibly death.</p>	
Safety Measures and Rules of Behavior		
   	<ul style="list-style-type: none"> • The fume hood is to be used only by instructed persons • When using HF, you must wear protective clothing: <ul style="list-style-type: none"> ○ Close-toed shoes and long pants ○ Lab coat and chemical-resistant apron ○ Full-face shield in conjunction with safety goggles ○ Neoprene rubber gloves with nitrile gloves underneath • Before beginning work you should locate: <ul style="list-style-type: none"> ○ First Aid Kit ○ Adequate supply of Calcium Gluconate • Safe Laboratory Practices <ul style="list-style-type: none"> ○ Never work with HF alone or after hours ○ HF reacts with glass, which should never be used to store or transfer it. Use the provided PTFE beakers ○ Make sure the fume hood ventilation system works correctly (green light) <p>Before working with HF, all user, including the safety buddy, are obliged to make themselves familiar with the following questions:</p> <ol style="list-style-type: none"> 1. Where are the emergency and eye showers? 2. Where can the calcium gluconate be found and how to use it? 3. How to behave in case of a severe accident? <p>In case of any unclear issues contact the responsible person Prof. Pernice.</p>	  
Behavior in a Dangerous Situation		
<ul style="list-style-type: none"> • Enter the danger zone only with adequate protective clothing • Do not touch any liquid • Get people out of the danger zone • Immediately leave the danger zone 		

	<ul style="list-style-type: none"> • Neutralize any liquid and use sufficient water to wash it away • Inform your superior 	
Action in Accident, First Aid		
	<p>Following skin contact</p> <ul style="list-style-type: none"> • Take off immediately all contaminated clothing. • After contact with skin, wash immediately with plenty of water. • Rub with a gel containing calcium gluconate. • From time to time wash away old gel and rub new. • Immediate medical treatment required because corrosive injuries that are not treated are hard to cure. <p>Following inhalation</p> <ul style="list-style-type: none"> • Remove source of contamination or move victim to fresh air. • If breathing is difficult, trained personnel should administer oxygen and 2.5% calcium gluconate, preferably with a doctor's advice. • DO NOT allow victim to move about unnecessarily. • Symptoms of pulmonary edema can be delayed up to 48 hours after exposure. • If breathing has stopped, trained personnel should begin artificial respiration (AR) or, if the heart has topped, cardiopulmonary resuscitation (CPR) or automated external defibrillation (AED) immediately. • Quickly transport victim to an emergency care facility. <p>Following eye contact</p> <ul style="list-style-type: none"> • In case of contact with eyes flush immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart. • Consult an ophthalmologist. <p>In case of accident, always see a doctor and inform your superior.</p>	
Disposal		
	<ul style="list-style-type: none"> • Do not dispose of the waste in the drain and use only the provided container. 	