



**AL-Mustaqbal University College**  
**Radiology Techniques Department**  
**First Class**

**Practical General Chemistry**

**First lecture (1)**

**(Lab Safety)**

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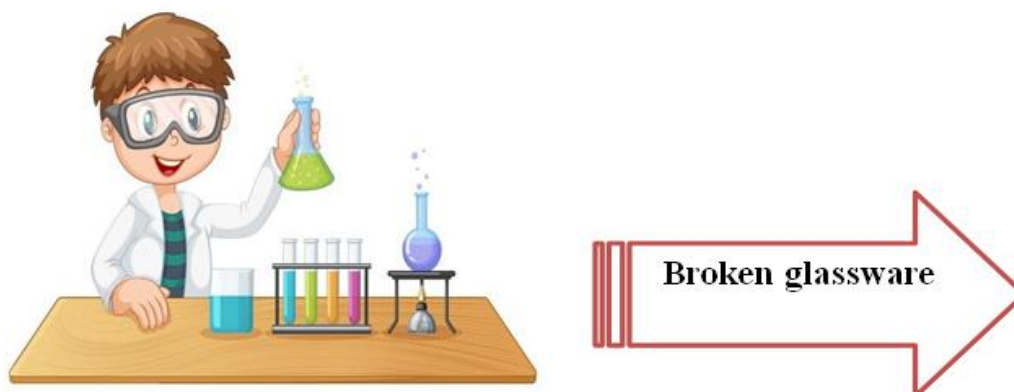
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## Glassware safety

1. Do not use chipped or cracked glassware and show it to the teacher.
2. If a piece of glassware gets broken, do not try to clean it up by yourself. Notify the teacher.
3. Do not place hot glassware in water. Rapid cooling may make it shatter.
4. When pouring liquids into glassware, make sure the container is not at the edge of the table.
5. Broken glassware should be disposed in a special glass



## Chemical safety

1. Always it must be know the chemicals that you are working with and the hazards may be causing.

### Material Safety Data Sheets (MSDS)

must be on file and available for each chemical in the lab.

**MSDS** lists:

- Product Identity
- Hazardous Ingredients
- Physical Data
- Fire & Explosion Hazard Data
- Reactivity Data
- Health Hazard Data
- Precautions for Safe Handling & Use
- Control Measures

2. Follow your teacher directions when using chemicals.

3. During lab work, keep your hands away from your face.

4. Never mix chemicals without your teacher telling to do.

5. Never put anything into your mouth during a lab experiment.

(Never taste any chemicals).

6. Never use mouth pipetting.



7. If you need to smell the odor of chemicals, do not put your nose over the container and inhale the fumes.

8. When diluting acids **avoid** adding the water

to the concentrated acid (causing an explosion, which can splash acid on you). Therefore, you must add acid slowly to water



9. Notify your teacher if any spills or accidents happen.

10. Store chemicals on shelves with labeling the chemicals and solutions



11. Storage of flammable should not be open. They must be in the container labeled with warning.

12. Storage of corrosives like strong acids and bases should not be open.

13. After handling chemicals, always wash your hands with soap and water.

14. All chemical waste must be collected properly labeled and sent for appropriate disposal. When heated the solution in a test tube it is very

## Heating safety

1. When heated the solution in a test tube it is very important to tilt it away from you to avoid inhaling fumes that coming from the solution



2. Use tongs or protective gloves to handle hot objects.
3. When heating a test tube, move it around slowly over the flame to distribute the heat evenly.
4. Only glassware that is thoroughly dry should be heated.
5. Make sure no flammable solvents in the surrounding area when lighting a flame.
6. Turn off all heating apparatus, gas valves, and water faucets when not in use.

## First Aid

- It is important to know the correct way to act if an emergency does occur.



- It must be know the location of safety equipment, which available in the lab, including the fire extinguisher, eyewash station and fire blanket



### Type of injuries

#### ❖ Burns:

##### To Do:

immediately flush with cold water until burning sensation is lessened.

#### ❖ Cuts, bruises



##### ❖ To Do:




do not touch an open wound without safety gloves. Pressing directly on minor cuts will stop bleeding in a few minutes. Apply a cold compress to bruises to reduce swelling

## GLASSWARE




Laboratory Glassware represent many of equipment, which used for scientific experiments in chemistry or biology labs. They are made of glass and found in many sizes and shapes.




The equipment that important in chemistry lab are:






	Name of the tools	Used for	The shape of it
1	Graduated Cylinder	<ul style="list-style-type: none"> <li>•For rapid Measurement Of liquid volume.</li> <li>•They are generally, more accurate and precise for this purpose than flasks.</li> </ul>	
2	Watch Glass	<ul style="list-style-type: none"> <li>•A watch glass is used to hold a small amount of solid, such as the product of a reaction.</li> <li>•Can also be used as a cover for an evaporating dish or beaker.</li> </ul>	


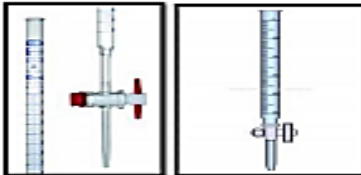



<b>3</b>	<b>Beaker</b>	<ul style="list-style-type: none"><li>•cylindrical container, usually with a pouring lip, to measure, mix, and heating liquids.</li><li>•Not used for accurate measurement.</li></ul>	
<b>4</b>	<b>Beaker tong</b>	<ul style="list-style-type: none"><li>•Tong used to carry a beaker after heating or cooling.</li></ul>	
<b>5</b>	<b>Volumetric Flask</b>	<ul style="list-style-type: none"><li>• Flat bottomed bulb with a long neck, usually fitted with a stopper.</li><li>• Used to prepare precise standard solutions.</li><li>•They are only good for 1 specific volume.</li></ul>	










<b>6</b>	<b>Conical Flask</b>	<ul style="list-style-type: none"><li>• Cylindrical container. Used to contain reactions or to hold liquids samples, or used to catch filtrates.</li></ul>	
<b>7</b>	<b>Funnel</b>	<ul style="list-style-type: none"><li>• Used for funneling liquids from one container to another or for filtering when equipped with filter paper.</li></ul>	
<b>8</b>	<b>Spatula</b>	<ul style="list-style-type: none"><li>• Used for transfer small quantities of solid chemicals (usually in powdered or crystal form).</li></ul>	

<b>9</b>	<b>Filter Paper</b>	<ul style="list-style-type: none"><li>• A semi-permeable paper barrier placed perpendicular to a liquid.</li><li>• Used to separate fine solids from liquids.</li></ul>	
<b>10</b>	<b>Test Tube</b>	<ul style="list-style-type: none"><li>• Common piece of glassware. Used for holding small quantities of samples or for containing reactions.</li></ul>	
<b>11</b>	<b>Test Tube Holder</b>	<ul style="list-style-type: none"><li>• A gripping device used to hold a test tube after heating or cooling.</li></ul>	

<b>12</b>	<b>Test Tube Rack</b>	• Used to hold/support test tubes containing chemicals through experiments.	 
<b>13</b>	<b>Pipette</b>	• Used to transfer small quantities of liquids.	
<b>14</b>	<b>Thermometer</b>	• Device used to measure the temperature of a substance.	 

<b>15</b>	<b>Stirrer</b>	<ul style="list-style-type: none"> <li>• A piece of glassware used to mix chemicals and liquids for lab purposes.</li> </ul>	
<b>16</b>	<b>Burette</b>	<ul style="list-style-type: none"> <li>• A vertical cylindrical piece of lab with volumetric graduation on its full length and a precision tap in the bottom.</li> <li>• Used to fill with known amounts of a liquid in experiments for which precision is necessary (e.g., a titration experiment).</li> </ul>	
<b>17</b>	<b>Washing bottle</b>	<ul style="list-style-type: none"> <li>• A wash bottle has a spout that delivers a wash solution to a specific area.</li> <li>• Distilled water is the only liquid that should be used in a wash bottle.</li> </ul>	
<b>18</b>	<b>Test tube brush</b>	<ul style="list-style-type: none"> <li>• Used to clean the inside of a test tube (or other long-necked glassware).</li> </ul>	
<b>19</b>	<b>Dropper</b>	<p>Usually, glass tubes tapered to a narrow point, and fitted with a rubber bulb at the top.</p> <ul style="list-style-type: none"> <li>• Used to transfer small quantities of liquids (drops).</li> </ul>	

20	<b>Retort Stand</b>	<ul style="list-style-type: none"><li>• A piece of scientific equipment, to which clamps can be attached to hold test tubes and another equipment (such as burette).</li></ul>	
21	<b>Crucible</b>	<ul style="list-style-type: none"><li>• Used for heating substances.</li><li>• Can withstand high direct heat</li></ul>	
22	<b>Balance</b>	<ul style="list-style-type: none"><li>• Used to measure the mass of a solid.</li></ul>	

23	<b>Hot Plate</b>	<ul style="list-style-type: none"> <li>• Used to heat substances in the lab.</li> <li>• Its work like a burner on your electric stove.</li> </ul>	
24	<b>Water Bath</b>	<ul style="list-style-type: none"> <li>• A vessel that contain water used to heat or maintain a constant temperature of lab materials.</li> </ul>	
25	<b>Fume Hoods</b>	<ul style="list-style-type: none"> <li>• Used for reactions that give off vapors, especially smelly vapors.</li> <li>• The draft of the hood will sweep away vapors so that the lab itself maintains reasonable air quality.</li> </ul>	
26	<b>Centrifuge</b>	<ul style="list-style-type: none"> <li>• Used to separate or concentrate materials suspended in a liquid medium.</li> </ul>	
27	<b>Separation Funnel</b>	<ul style="list-style-type: none"> <li>• To separate a mixture of two liquids.</li> </ul>	