

# Kinetic chemistry

[Science](#), [Chemistry](#)



The name of the course: Kinetic Chemistry

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Spectrophotometry: is a device to measure the amount of light in the material used.

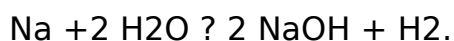
This device consists of two parts: the first is the light source, and the second is the photometer . the work principle of this device : the liquid or material that we want to measure the elements inside is placed in a tub, this tube is then placed between the light source and the photometer . so that the amount of light passing through the sample is measured by photometer.

When a photometer is exposed to light, it acquires or generates an electrical signal that changes with the amount of light absorbed by the liquid . this change in light absorption depends on the change in the concentration of the substance. the way work this device: this device it measures the absorption of light by liquid materials at different wavelengths, and thus can identify a number of unknown substances or calculate known concentrations of materials . 22288507372350

Stepped flow Technique: is a rapid mixing device, to study the kinetics of quick chemical reactions in solutions . this device contains two reactants which are kept in separate reservoirs and are prevented from flowing freely . the interaction starts by installing the reactants in the device. these materials are then released to the mixing chamber, which mixes these interacting materials , the reaction is then monitored by observing the change in the absorption of the reaction solution .

When the reaction progresses, it fills the " stop syringe" that expands until it reaches the point at which the interaction reaches a continuous flow , thus stopping flow or interaction27527257162800Sodium reacts strongly and quickly with water and produces a solution of sodium hydroxide and hydrogen gas, a colorless solution.

During the reaction sodium can be heated and It may ignite and burn with an orange flame . Hydrogen gas released during the combustion process reacts with oxygen in the air . the resulting solution is basic because of the melting of sodium in the water. this interaction between sodium and water is an exothermic reaction. sodium reaction with water is the closest to explosion.



This search used this interaction and because it is fast, it uses the stepped-flow techniques method to control it  $\text{Rate} = -\frac{d[\text{Na}]}{dt} = -\frac{1}{2}\frac{d[\text{H}_2\text{O}]}{dt} = \frac{1}{2}\frac{d[\text{NaOH}]}{dt} + \frac{d[\text{H}_2]}{dt}$

Reverences:

1. Physical chemistry for the life sciences -Thomas Engel
2. Compendium of Chemical Terminology
3. Physical chemistry for the life sciences-Peter Atkins , Julio De Paula
4. Advances in standards and methodology in spectrophotometry , K. D. Mielen