

## Having fun learning about chemical kinetics

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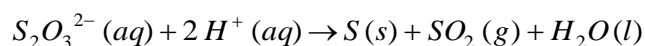
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### ABSTRACT

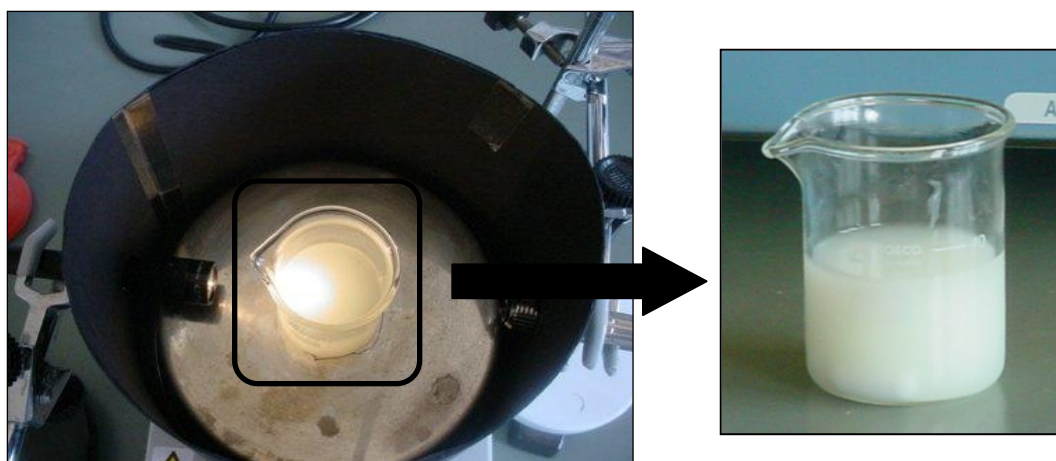
**Keywords:** Kinetics, Chemical Reaction, Learning, ICT, Data-logging.

The study of chemical kinetics can be fun, especially when investigative experimental work is combined with data-logging and ICT.

The addition of hydrochloric acid to a sodium thiosulphate solution makes possible that the thiosulphate ions react with the hydrogen ions, as the following chemical equation describes:



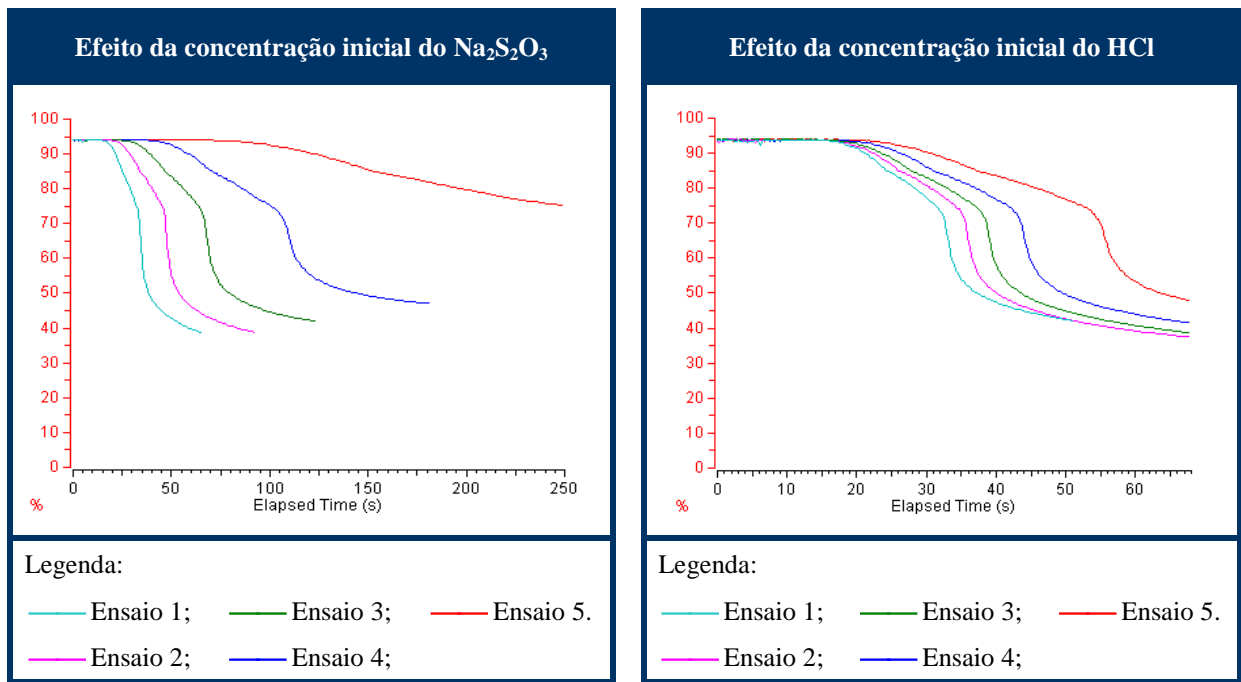
During the chemical reaction the formation of a sulphur precipitate can be observed. This precipitate interferes with a beam of light that is transmitted through the solution, diminishing its intensity at the sensor receptor (Figure 1). The variation of light intensity transmitted through the solution is monitored using a light sensor.



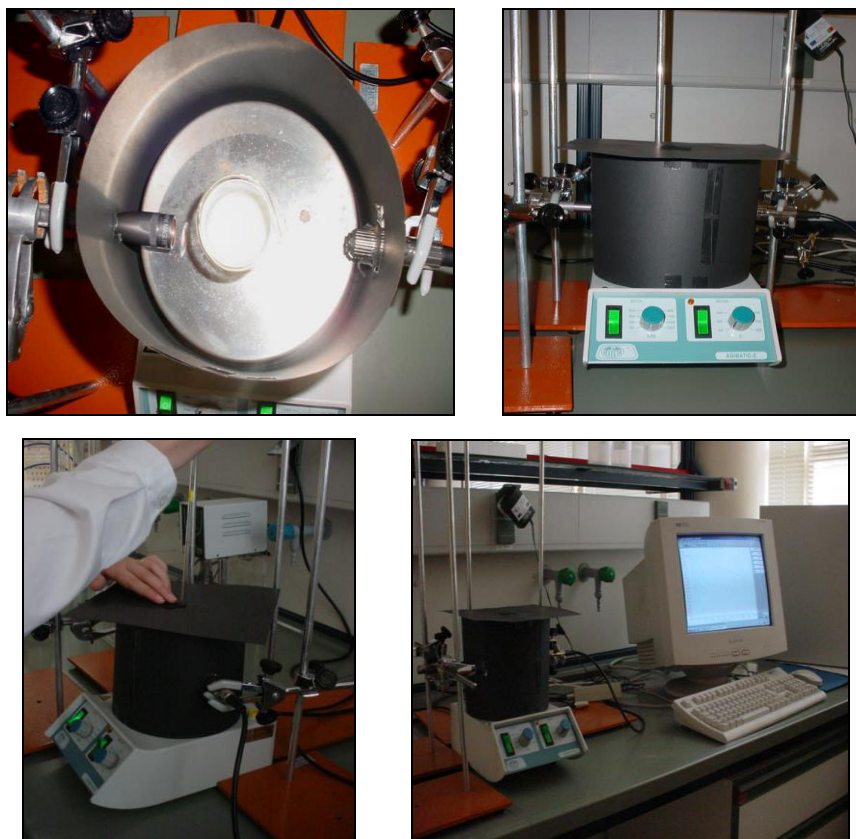
**Figure 1 – Aspect of the solution due to the chemical reaction between sodium thiosulphate and hydrochloric acid.**

To study the effect of reactants initial concentration on the rate of this reaction sets of sodium thiosulphate solutions and hydrochloric acid with different concentrations were used.

The analysis of graphs (Figure 2) representing the decrease in light intensity transmitted through the solution along time, for the different essays, allows us to determine the time interval needed to the formation of a certain quantity of precipitate. As the rate of the chemical reaction is inversely proportional to that time, it is possible to evaluate the effect of the initial concentration of reactants on the rate of this chemical reaction.



**Figure 2 – Graph of  $light\ intensity = f(t)$  obtained on this study.**



**Figure 3 – Images of the experiment**