

Orange Juice Clock

Concepts

Science Concept: The clock is powered by a redox reaction involving Cu, Mg and the orange juice containing acid (H^+).

This demo can be used to demonstrate the following:

1. Redox Reaction
2. Conductivity
3. Electricity

Explanation:

The reaction releases two electrons (oxidation of Mg) which then power the clock as they pass through the circuit. At the other end it reduced the H^+ ions in the acid to H_2 gas. You can see bubbles in the solution. The Cu does not participate since there are not Cu ions in solution.

Oxidation: $\text{Mg} \rightarrow \text{Mg}^{2+} + 2\text{e}^-$

Reduction: $2\text{H}^+ + 2\text{e}^- \rightarrow \text{H}_2$

Sources:

Chemistry Comes Alive!,

<http://jchemed.chem.wisc.edu/JCESoft/CCA/CCA3/MAIN/OJCLOCK/PAGE2.HTM>

If you have other explanations, concepts, or ideas for this demonstration please share them by contacting our Chem Demo team (bedell@nku.edu; sieveb1@nku.edu). We will pass them on to the community and credit you with the ideas.