

Distillation teaching resources

Education in Chemistry

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rsc.li/EiC118-distillation

Background information

- A summary of distillation from the Greeks to the modern age: <http://montgomerydistillery.com/our-process/distilling/>
- An introductory booklet to the crude oil refinery in Southampton, the Fawley Refinery and Petrochemical Plant: www.exxonmobil.co.uk/UK-English/files/Fawley_2011.pdf
- Liquid nitrogen in medical treatments, and sample storage. Liquid nitrogen is also used to keep liquid helium cool in MRI scanners: <http://www.bochealthcare.co.uk/en/products-and-services/products-and-services-by-category/medical-gases/liquid-nitrogen/liquid-nitrogen.html>
- Facts about worldwide access to safe drinking water, including economic and social effects: <http://www.who.int/mediacentre/factsheets/fs391/en/>
- A clear explanation of Raoult's law, and its implication in distillation: <http://www.chemguide.co.uk/physical/phaseseqia/idealpd.html>
- A booklet containing background information, and full synthetic and analytical details for paracetamol: <http://www.rsc.org/learn-chemistry/resource/res00000058/paracetamol-book.pdf>

Practical experiments

- Extract water from wet sand in the desert, with limited equipment: <http://www.rsc.org/learn-chemistry/resource/res00001192/desert-survival>
- A simple activity to build a solar still that can be carried out with materials from a kitchen: <http://pbskids.org/zoom/activities/sci/solarstill.html>
- A simple activity to demonstrate extraction of water by distillation by recovering water from copper sulfate solution: <http://www.rsc.org/learn-chemistry/resource/res00001768/recovering-water-from-copper-ii-sulfate-solution>
- Practical details and a video showing how to make sugar crystals. This activity could be carried out by pupils at home, with relevant permissions for parents/carers: <https://www.thoughtco.com/how-to-grow-sugar-crystals-607659>
- Teacher/technician and student sheets for carrying out a simple fractional distillation of synthetic crude oil. This practical for OCR is equally applicable for students following other exam boards' qualifications: <http://www.ocr.org.uk/Images/360827-pag-activity-chemistry-distillation-suggestion-2-.docx>
- Teacher/technician and student sheets for carrying out a simple steam distillation of limonene from orange peel, and qualitative tests on the product. This practical for OCR is equally applicable for students following other exam boards' qualifications: <http://www.ocr.org.uk/Images/323641-pag-activity-chemistry-distillation-suggestion-1.docx>
- Practical instructions for a two tube steam distillation from cloves (or other source of fragrant oils): https://www.rsc.org/cpd/teachers/content/filerepository/CMP/00/000/875/WASH_BAG_Product_pack.pdf
- Full detailed instructions for making a cheap conductivity meter: <http://www.sserc.org.uk/chemistry-resources/microscale-chemistry/microscale-equipment/3925-conductivity-meter>

Demonstrations

- A large scale extraction of limonene from orange peel, using Quickfit Liebig condensers: <http://www.rsc.org/learn-chemistry/resource/res00000692/extracting-limonene-from-oranges>

Videos and animations

- Investigate the basics of states of matter and how particles respond to heating, cooling and compression using this interactive simulation: <https://phet.colorado.edu/en/simulation/states-of-matter-basics>

- A clear video and a useful interactive animation showing the key points about how the equipment works within the Fractional distillation interactive laboratory primer: <http://www.rsc.org/learn-chemistry/resource/res00002248/fractional-distillation>
- A video showing the outline procedures of Basic Oxygen Steel making, which requires both pure oxygen and argon: <http://www.rsc.org/learn-chemistry/resource/res00000023/iron-and-steel#!cmpid=CMP00001688>
- Video with commentary on how to set up a distillation apparatus: <https://www.youtube.com/watch?v=cmOIPqFTKS8>
- Particle model of evaporation and condensation within the distillation interactive lab primer: <http://www.rsc.org/learn-chemistry/resource/res00001070/distillation>

Other classroom activities

- A cross-curricular lesson resource involving drama, modelling and card sorting, on the water cycle, covering science and geography: www.wateraid.org/uk/~media/Files/UK/The_Water_Cycle.pdf