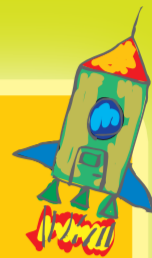


WEEKEND SCIENCE

WELCOME to Weekend Science! Every Saturday we're going to guide you through some cool experiments that you can do at home. It's a good idea for you to keep a record of what you do in a Science Journal. That way you can record what you learn, compare results and maybe use them to design new experiments! Remember to always ask a grown-up's permission before trying out an experiment.

歡迎閱讀《週末科學版》！我們每週六都要為你介紹可以在家中進行的有趣科學實驗。你可以在《科學日誌》中記錄自己做了哪些活動，這樣就可以將所學的記錄下來，比較這些結果，也許還可以利用它們來設計新的實驗！先看一下《科學日誌》的點子再開始吧。展開實驗之前，記得要獲得大人許可喔！



Separating water: it's easier than it sounds

分解水實驗 簡單動手做

Most people know that water is made of **hydrogen** and **oxygen**. The chemical symbol is H_2O , which means that every water **molecule** consists of two hydrogen atoms bound to one oxygen **atom**. But did you know that it's possible to separate water into oxygen and hydrogen? In fact the experiment is so simple that you can do it at home with everyday household equipment.

大部分的人都知道水是由氫和氧所組成，其化學符號是 H_2O ，意思就是每個水分子是由兩個氫原子和一個氧原子結合而成。但你知道水可以分解為氫和氧嗎？事實上，這個實驗簡單到在家中利用家庭日常用品就可以進行。

What you will need: a nine volt battery, two pencils, a piece of cardboard, a glass of warm water, some salt and about 50cm of wire.

實驗所需：一個九伏特的電池、兩枝鉛筆、一張厚紙板、一杯溫開水、一些鹽和約五十分公長的電線。

METHOD- OLOGY

Step 1: Remove the eraser and metal from the ends of the pencils and sharpen at both ends.

Step 2: Push the pencils through the cardboard, about 2cm apart and stand them up in the water.

Step 3: Sprinkle some salt in the water and let it dissolve.

Step 4: Connect a wire from the negative terminal of the battery to the graphite tip of one of the pencils. Connect the other wire from the other pencil to the positive terminal. Observe what happens.

方法

步驟一：取下兩枝鉛筆尾端的橡皮擦和金屬片後，將兩端都削尖。

步驟二：將兩枝鉛筆間隔約兩公分戳入紙板後，使其站立於溫水杯中。

步驟三：在水裡撒一些鹽，待其溶解。

步驟四：將電線的一端接在電池的負極上，另一端連到其中一枝鉛筆的筆芯上。將另一根電線的一頭接上另一枝鉛筆，另一頭連上電池的正極。觀察有什麼變化。

WHY IT WORKS 實驗原理

Hydrogen forms at the **cathode** (the negative terminal) and chlorine forms at the **anode** (the positive terminal) in a process known as **electrolysis**.

Perhaps you're wondering how you managed to make chlorine from hydrogen and oxygen. The reason is because of the salt. In step three we added salt because electrolysis of pure water is extremely slow. The chemical formula for salt is sodium chloride ($NaCl$). During electrolysis, the oxygen atoms react with the salt to form chlorine gas.

(JOHN PHILLIPS, STAFF WRITER)

電池陰極（負極）會產生氫氣，而陽極（正極）則會產生氯氣，這就是所謂的電解作用。

也許你會好奇氯是怎麼從氫和氧中跑出來的。答案就是鹽！在步驟三中，我們加入了鹽，這是因為純水的電解過程極為緩慢，而鹽的化學式是氯化鈉（ $NaCl$ ）。在電解過程中，氧原子和鹽起作用產生了氯氣。

(翻譯：袁星慶)

Electrolysis has many industrial uses, including the production of aluminum, magnesium, and of course chlorine.

電解作用可以應用在許多工業用途上，包括鋁、鎂，當然還有氯的製作。

VOCABULARY 今日單字

- 1. hydrogen** / ha dr n/ n. 氫 (qing1)
- 2. oxygen** / ks n/ n. 氧 (yang3)
- 3. molecule** / m l ,kjul/ n. 分子 (fen1 zi3)
- 4. atom** / æt m/ n. 原子 (yuan2 zi3)
- 5. cathode** / kæ od/ n. 陰極 (yin1 ji2)
- 6. anode** / ænod/ n. 陽極 (yang2 ji2)
- 7. electrolysis** / l k tr l s s/ n. 電解作用 (dian4 jie3 zuo4 yong4)



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Did you have fun with today's experiment? Why don't you e-mail us and let us know. We're always happy to hear from our readers!

喜歡今天的實驗嗎？歡迎來函指教！電子信箱：bilingual@taipeitimes.com