



**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囉！

## When opposites attract 異性相吸

The Ancient Greeks and Chinese were the first civilizations to discover that they could make a compass from magnets. Since then, mankind has been discovering more practical uses of **magnetism**, and today you will find magnets in many household objects, such as headphones, refrigerators and TVs.

All magnets have two **poles**, north and south. When suspended by a string, the north pole will align itself with the earth's North Pole, and the south pole will point to the South Pole.

In today's experiment you will harness the power of magnetic **repulsion** to make a magnet **levitate**.

What you will need: two bar magnets with the poles marked, two ring magnets, a pencil, some polystyrene and a notebook. (JOHN PHILLIPS, STAFF WRITER)

### ATTRACTION AND REPULSION

Step 1: Find out what makes a magnet attract or repel. Take the two magnets and bring the two north poles together. Make a note of what happens. Now do the same thing with the two south poles.

Step 2: Reverse one of the magnets and bring two opposite poles together, ie north and south. You should now know what causes the magnets to attract and repel.

### LEVITATION

Step 1: Now we're going to show you how to make your magnets levitate. Take one of your ring magnets and put it on a table. Bring the north pole of your bar magnet close to the **surface** of the ring magnet. If they attract, this is the south pole of the ring magnet. If not, it's the north pole. Do the same with the other ring magnet.

Step 2: Now get your pencil and stick it in the polystyrene block so it's vertical. Slide a ring magnet to the bottom. Identify the opposite pole of the other ring magnet, then slide it onto the pencil. If you identified the poles correctly, the magnet should levitate a few centimeters above the other one. Show your friends your cool trick!

### 飄浮作用

步驟一：現在，我們要來示範如何製作懸浮的磁鐵。將一個環形磁鐵放在桌上，把一個條狀磁鐵的北極端靠近這個環狀磁鐵的表面。如果兩塊磁鐵互相吸引，就表示此處是環形磁鐵的南極；若沒有相互吸引，則為北極。用同樣方式測試另一塊環形磁鐵。

步驟二：接著，把鉛筆直立插入保麗龍中。將一個環形磁鐵套進鉛筆放到保麗龍底部。找出另一個環形磁鐵的相反磁極，然後把它套進鉛筆。若檢驗的兩極結果正確，這塊磁鐵應該會懸浮於底部那塊磁鐵上方數公分之處。向朋友炫耀這個酷炫的花招吧！



In this Feb. 28, 2007 file photo, spectators look at the giant magnet being placed underground in the Large Hadron Collider (LHC) accelerator at CERN, the European Particle Physics laboratory, in Cressy, France near Geneva.

PHOTO: AP

這張二〇〇七年二月二十八日的檔案照片中，鄰近瑞士日內瓦、位在法國克雷西鎮的歐洲粒子物理實驗室內，一群人在地底下圍觀「大型強子對撞器」加速裝置中的巨型磁鐵。  
照片：美聯社

古希臘人和中國人是最早發現可使用磁鐵來製作指南針的文明。自此之後，人類發現了更多應用磁力的方式，因此今日你可以在許多家用品上發現磁鐵的蹤跡，例如耳機、電冰箱和電視等。

所有磁鐵都有南、北兩極。用細線懸掛磁鐵時，磁鐵的北極會自動指向地球北極，而磁鐵的南極會指向地球南極。



今天的實驗中，你將利用磁性拒斥的作用來製作一個飄浮磁鐵。

實驗所需：兩個有標記兩極的長條形磁鐵、兩個環形磁鐵、一枝鉛筆、若干保麗龍和一本筆記本。  
(翻譯：袁星塵)

### 吸引作用和排斥作用

步驟一：找出磁鐵相吸或相斥的原因。把兩個磁鐵的北極相互靠近，記下發生什麼變化。然後對兩個磁鐵的南極如法泡製。

步驟二：將其中一個磁鐵轉向，將相反的兩極相互靠近，例如北極對南極。現在你應該知道磁鐵相吸和相斥的原因了。

### HOW IT WORKS

Around any magnetic object there are lines of magnetic **flux** flowing from the north and re-entering in the south. If the lines of flux are flowing in the same direction, they will link up and the magnets will attract.

### 實驗原理

所有的磁鐵都環繞著從北極流往南極的磁通線。若磁通線流通的方向一致就會互相連接，磁鐵因而相吸。

### VOCABULARY 今日單字

- magnetism** / mægn ,t z m/ n. 磁力 (ci2 li4)
- pole** / pol/ n. 磁極 (ci2 ji2)
- repulsion** / r p l n/ n. 排斥作用 (pai2 chi4 zuo4 yong4)
- levitate** / l v ,tet/ v.i/v.t. 使飄浮 (shi3 piao1 fu2)
- surface** / s f s/ n. 表面 (biao3 mian4)
- flux** / fl ks/ n. 通量 (tong1 liang4)



bilingual@taipeitimes.com

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