认识Periodic table元素周期表

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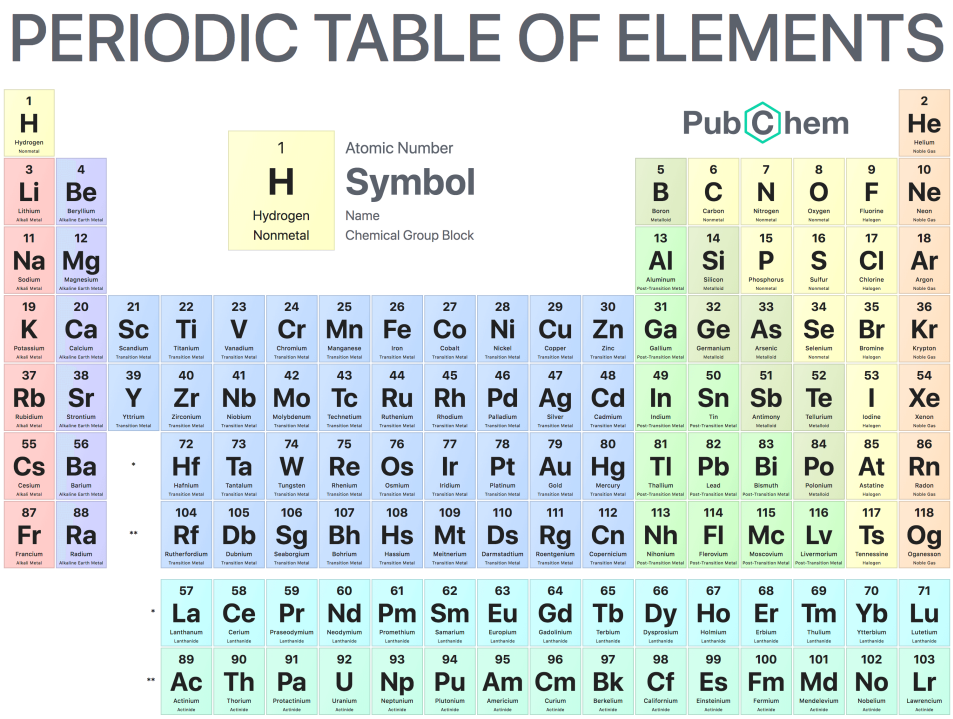

The **periodic table**, also known as the **periodic table of (the) (chemical) elements**, is a tabular display of the chemical elements. It is widely used in chemistry, physics, and other sciences, and is generally seen as an icon of chemistry. It is a graphic formulation of the periodic law, which states that the properties of the chemical elements exhibit a periodic dependence on their atomic numbers.

周期表(或**元素周期表**或**化学元素周期表**)，是化学元素的表格化展示。在化学、物理及其他众多学科中有着广泛的应用，它也被视作化学学科的标志。周期表是元素周期律的图像化表达方式，这说明化学元素的性质表现出对其原子序数的周期依赖性。(来源：wikipedia.org)(魏峣翻译)

Why Arrange Elements in a Table?为什么把元素安排在一个表格里?

Seeing chemical elements arranged in the modern periodic table is as familiar as seeing a map of the world, but it was not always so obvious.
我们看现代元素周期表中排列的元素就像看世界地图一样熟悉，但并不总是那么明显。

The creator of the periodic table, **Dmitri Mendeleev**, in 1869 began collecting and sorting known properties of elements, like he was playing a game, while traveling by train. He noticed that there were groups of elements that exhibited similar properties, but he also noticed that there were plenty of exceptions to the emerging patterns.
元素周期表的编制者**德米特里·门捷列夫**于1869年开始收集整理元素的已知性质。举个例子，有一次他在乘火车旅行玩游戏时注意到，有一些元素表现出类似的性质，但同时也注意到，新兴的模式中有很多例外。

Incredibly, instead of giving up, he tried altering the measured property values to better fit the patterns! He also predicted that certain elements must exist which didn't at the time – again, in an effort to get the patterns in his "game" to work out.
令人难以置信的是，他没有放弃，而是试图修改测量的性质，以更好地适应该模式！他还预测，某些元素一定存在，而这些元素在当时是不存在的——这也是为了让他“游戏”中的模式发挥作用。

There were plenty of skeptics and it took years to gain international acceptance, but once newly-discovered elements matched the ones that Mendeleev predicted, his patterns could not be dismissed. In addition, some of the properties that he "fudged" were later recalculated and found to be much closer to his predictions.
有很多质疑者，门捷列夫花了数年时间才获得国际认可。一些新发现的元素与门捷列夫预测的元素相匹配，他的模式不能被忽视。此外，他“捏造”的一些属性后来被重新计算出与他的预测更接近。

Does the Modern Periodic Table Change? If So, How and Who Does That?现代元素周期表会改变吗？如果是，怎么做，该谁做?

The periodic table as we know it today is managed by **the International Union of Pure and Applied Chemistry, or IUPAC** (eye-you-pack).
我们今天所知道的元素周期表是由**国际纯粹与应用化学联合会**（简称IUPAC，音eye-you-pack）管理的。

While much of what is in the periodic table is stable and unlikely to change, the IUPAC organization is responsible for deciding what needs to be changed. They have created criteria for what constitutes the discovery of a new element.
虽然元素周期表中的大部分内容是固定的，不太可能改变。但IUPAC负责决定需要改变的内容，他们为新元素的发现制造了标准。

In addition, any new element must be assigned a temporary name and symbol, and if validated, given an official name. Such was the case when IUPAC recently reviewed elements 113, 115, 117 and 118, and decided to give them official names and symbols (goodbye, ununseptium and hello, tennessine!).
此外，任何新元素都必须指定一个临时名称和符号，如果经过确认，还必须指定一个正式名称。IUPAC最近审查了113号、115号、117号和118号元素，并决定给它们正式的名称和符号（再见，ununseptium；你好，tennessine！）。

Atomic weights found within a periodic table one might think are constant. The truth is that atomic weights have changed as a function of time. Since 1899 the IUPAC Commission on Isotopic Abundances and Atomic Weights (CIAAW) has been evaluating atomic weights and abundances. For example, Carbon had an atomic weight of 12.00 in 1902 but today it is [12.0096, 12.0116]! Times sure have changed as the source of the sample will determine the value.
元素周期表中的原子量可以认是常数。可事实是原子量随时间而变化。自1899年以来，IUPAC同位素丰度与原子量委员会（CIAAW）一直在评估原子量和丰度。例如，碳在1902年的原子量是12.00，但现在是[12.0096,12.0116]！数值由样本来源决定，肯定随时间变化。

Finally, IUPAC assigns collective names (lanthanoids and actinoids) and group numbering (1 to 18) and has investigated the membership of the group 3 elements.
最后，IUPAC指定了集体名称（镧系和锕系）和族号（1至18），并调查了第3族元素。