



## Cosmic Conditions Suitable for the Noble Class



Everything on Earth, in our Solar System, in our Galaxy, in fact, everything in the entire Universe that you can touch or see, or feel, or smell can be broken down into just 98 naturally-occurring materials that are called 'elements'. Some elements you might know are oxygen, iron, gold and silver.

When one or more elements stick together, they form 'molecules'. These make up all the other thousands of materials in the Universe. Water and carbon dioxide are both molecules. But some elements don't like to play with others, and don't stick to other elements to create molecules. 'Noble gases' are a group of elements that particularly dislike sticking to other elements, so they are mostly found on their own.

Having said that, under the right circumstances noble gases can form molecules. These conditions have been created in laboratories many times and many noble gas molecules have been created by scientists. But these rare molecules have never been found out in space, leading scientists to believe that the "right conditions" for these molecules just don't exist in space – until now!

The Crab Nebula, which can be seen in this picture, formed 1000 years ago when a massive star exploded. A new study of this well-known object has uncovered something very surprising – a rare molecule called argon hydride (pronounced 'ahr-gon hide-ride'). This is a molecule formed when the noble gas 'argon' joins with the most common element in the Universe, 'hydrogen'. It seems that the Crab Nebula provides exactly those "right conditions" that we'd almost given up all hope of finding!

### COOL FACT



There are actually 118 elements known altogether, but only 98 of them occur in nature. All of the other elements are strictly man-made. All known elements have been listed and categorised neatly in the periodic table.



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