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From Stardust to Life: Exploring Molecules in the Cosmos

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From Stardust to Life: Exploring Molecules in the Cosmos

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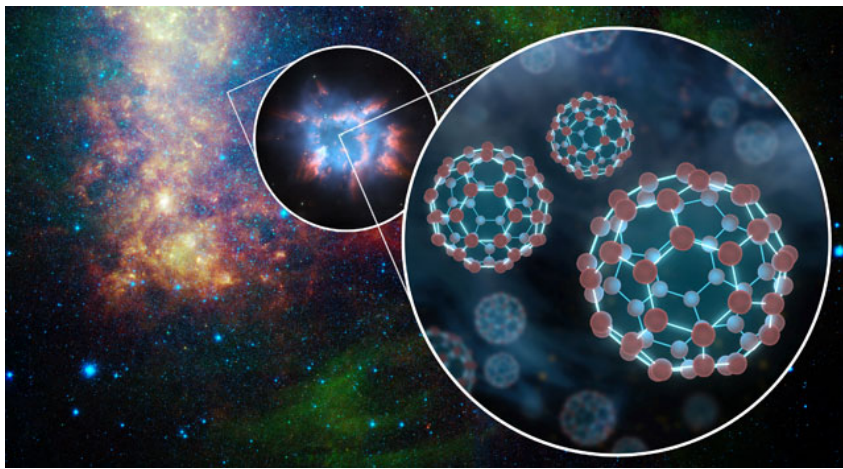


Figure 1: Molecules in Space.

Why did the molecules throw a party in space?

Because they wanted to have an "out of this world" bonding experience!

All molecules we have in our bodies were formed somewhere out there in the Universe. Studying molecules in space is our opportunity to answer fundamental questions like how stars are formed and how life originated. I study molecules in a particular region - clouds of gas and dust between the stars. The molecules in there absorb the starlight, causing distinct absorption signals. Although these bands were first detected in 1919, their exact molecular origins remain largely unknown, except for C_{60}^+ . Out of more than 500 bands that are already detected, we know the origins of only five. My research narrow down the list of possible molecules until we find an exact match. I do that by carefully examining the absorption signals. The shapes of those signals are associated with how molecules move in space (rotate and vibrate), and thus those shapes are a gateway to understanding what kind of molecule is responsible. I will soon know what is the size of the molecules and what it looks like.