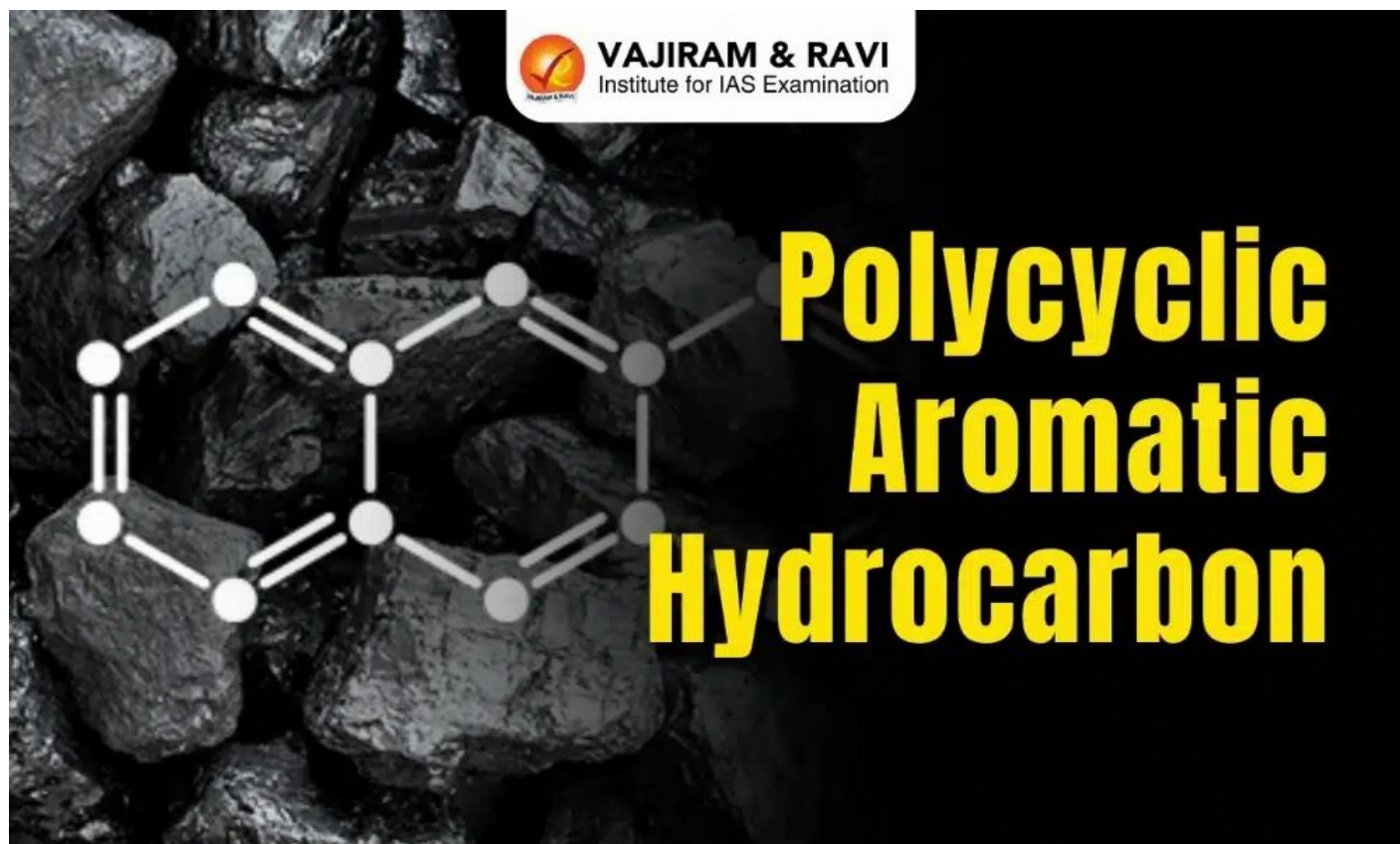


Polycyclic Aromatic Hydrocarbon

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Polycyclic Aromatic Hydrocarbon Latest News

Recently, researchers from Australia, Sweden, and the UK studied the indenyl cation, $C_9H_7^+$ and revealed how Polycyclic aromatic hydrocarbons molecules survival in Taurus Molecular Cloud 1 (TMC1).

About Polycyclic Aromatic Hydrocarbon

- Polycyclic aromatic hydrocarbons (PAHs) are **flat, ring-shaped molecules** of **carbon and hydrogen**.
- Astronomers think they make up a fifth of all carbon in **interstellar space**.
- There is a hypothesis that meteors brought PAHs from space to young earth and created the first building blocks of life, attaching important value to their ability to survive in space.
- They have a **relatively low solubility in water** but are highly lipophilic and are soluble in most organic solvents.
- These hydrocarbons, on earth, are formed through **incomplete combustion or pyrolysis of organic materials**, such as fossil fuels and biomass

- When PAHs collide with other particles or **absorb high-energy radiation**, they can **have more internal energy** than their weakest chemical bond can handle.

Key Facts about Taurus Molecular Cloud 1

- It is a molecular cloud located in the **constellation Taurus about 430 lightyears away** from Earth.
- It is a collection of **gas, dust, and plasma**.
- It is known for **its cold and dense conditions**, which are favorable for the formation of complex molecules.
- The cloud is primarily composed of **molecular hydrogen** (H₂), with other molecules such as carbon monoxide (CO), ammonia (NH₃), and various organic compounds also present.
- In Taurus Molecular Cloud 1 (TMC1), **small closed-shell PAHs** — molecules whose electrons are in pairs — appear in greater quantities even though they are constantly exposed to starlight that should have destroyed them.
- The team found that the **PAHs** have a **mechanism to cool rapidly**, letting them accumulate in TMC1 over time.

Source: **TH**

Source: <https://vajiramandravi.com/current-affairs/polycyclic-aromatic-hydrocarbon/>

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