

Stellar Metamorphosis: The Exothermic Reactions of Water During Stellar Evolution

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Abstract: For a star to synthesize water oceans a few steps of exothermic reactions are required. A simple explanation is provided to fit inside of the General Theory of Stellar Metamorphosis.

First off we can safely assume that the majority of the elements a star is comprised of were already made as a direct result of galaxy birth. Therefore we can discard stars as fusion reactors making either hydrogen or oxygen. Since the star has hydrogen and oxygen in its ionized state we can work from there.

The steps for water ocean synthesis are provided below.

1. Hydrogen combines with hydrogen and oxygen with oxygen during plasma recombination forming hydrogen and oxygen gas. This process releases heat (is exothermic) as the elements lose a significant amount of enthalpy. (Young stars/Sun)
2. Hydrogen and oxygen gas combine to form water vapor. This process releases heat (is exothermic). (Middle aged stars/Jupiter)
3. Water vapor condenses into liquid water. This process also releases heat (is exothermic) and is a basic thermodynamic phase transition called "condensation". (Old stars/Earth)

Therefore there are three types of exothermic reactions that occur during star evolution as the star forms water. The gravitational potential energy of the collapsing cloud is stored as chemical bond energy during the synthesis of water and most chemical compounds on the Earth. During star evolution, the star remains hot in its interior as it evolves. This means the more evolved stars like Jupiter/Saturn and Neptune/Uranus do not have spectrums but have internalized their heat production as they evolve and undergo metamorphosis.