

Like fireflies, on a still summer night, they gently dot and illuminate the infinite velveteen sky. Stars. Be they millions or billions of years old, are all born in nebulae, clouds of dust and mostly hydrogen gas. Within these stellar nurseries, stars begin life as protostars or hot cores formed by the collection and collapse of dust and gas. As the protostars become hotter, hydrogen nuclei inside of the cores begin to fuse and create helium. It is this chemical reaction, thermonuclear fusion, that generates star's heat and energy and causes it to shine.

Stars are categorized by a number of characteristics. One of these classifications is by surface temperature called spectral classes. These seven major groups range from the coolest stars which are designated as M and up to the hottest stars which are designated as O. Stars are also classified by the amount of light they emit or luminosity, called luminosity classes, these nine major groups range from the small, less bright white dwarfs, to the large and extremely bright hyper-giants.

But no matter their luminosity or surface temperature, all stars eventually burn through their hydrogen fuel and die out. Less massive stars such as our Sun release their stellar material into space leaving behind a white dwarf surrounded by a planetary nebula. More massive stars instead blast matter into space in a bright supernova, leaving behind an extremely dense body called a neutron star. But the most massive stars, stars that are at least three times our sun's mass, collapse into themselves and create a bottomless well of gravity, a black hole. But from the remnants of stars, heavier elements are cast into the universe and it is this star dust that formed the seedlings of life itself.