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A Fiery Descent: What Happens to a Meteoroid When it Enters Earth's Atmosphere?

Have you ever gazed up at the night sky and witnessed a brilliant streak of light darting across the darkness? That mesmerizing spectacle is known as a meteor, and it's the result of a meteoroid entering Earth's atmosphere. In this passage, we'll delve into the exciting journey of a meteoroid as it encounters Earth's protective shield and transforms into a meteor.

The Journey Begins

Before we explore the dramatic entry of a meteoroid into Earth's atmosphere, let's understand what a meteoroid is. A meteoroid is a small rock or metal fragment from space, ranging in size from a grain of sand to a boulder. These celestial wanderers travel through the vastness of space, often originating from asteroids, comets, or even the Moon and Mars.

Atmospheric Entry

As a meteoroid approaches Earth, it enters the outermost layer of our planet's protective cloak – the atmosphere. The atmosphere is a mixture of gases that surrounds Earth and extends hundreds of kilometers into space. When the meteoroid encounters the atmosphere, it's moving at an incredibly high speed, often tens of thousands of kilometers per hour.

Friction and Heat

As the meteoroid plows through the atmosphere, it experiences a force known as drag, caused by the collision with air molecules. This immense friction generates an intense heat, heating up the meteoroid's surface. This process is similar to rubbing your hands together briskly, feeling them warm up due to friction.



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Ablation and Brightness

The heat produced during entry causes the meteoroid's outer layers to vaporize or ablate, shedding tiny pieces of itself in a glowing trail behind it. This luminous trail is what we see as a meteor. The brighter and more spectacular the meteor, the larger the meteoroid and the faster its entry speed.

Different Stages

The life of a meteoroid in the atmosphere can be divided into several stages. Initially, it's too high and dim to see, and we call it a "meteoroid." As it heats up and starts glowing, we refer to it as a "meteor" or "shooting star." If it survives the journey and reaches the Earth's surface, it becomes a "meteorite."

Final Moments

As the meteoroid continues its descent, it eventually reaches an altitude where the surrounding air is dense enough to slow it down significantly. At this point, it no longer emits a visible trail and is often too faint to be seen. This is the end of its fiery journey.

Survivors and Impact

While most meteoroids disintegrate completely during their fiery descent, some larger ones may survive and reach Earth's surface as meteorites. These meteorites can provide valuable insights into the composition of our solar system and the early stages of its formation.

In summary, the journey of a meteoroid entering Earth's atmosphere is a spectacular and dramatic process, from its initial high-speed entry to the radiant glow of a meteor and, in rare cases, its eventual survival as a meteorite.

