HOW DID AMMONITE FOSSILS FORM?

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Dead ammonites were buried by sediment millions of years ago. Chemical processes then eventually produced a fossil.

AMMONITE SHELLS
Ammonite shells are made of the calcium carbonate mineral aragonite. Over long time periods the aragonite can change into a more stable mineral form of calcium carbonate, called calcite.

Fossilisation and minerals
Over time the chambers of the buried ammonite shell can fill with mineral deposits. This produces detailed fossils and some shell can remain intact. In other cases the shell dissolves and mineral deposits fill the cavity to produce a cast.

Silification
In silification, silica-rich solutions replace calcium carbonate with silica. Pyritisation occurs in sediment saturated with iron sulfides. Pyritised fossils can oxidise and slowly disintegrate in humid conditions.

Calcium carbonate

\[ \text{CaCO}_3 \]

Aragonite → Calcite

Silification
Silica
Grey/black appearance
Calcium carbonate

Pyritization
Iron sulfide
Golden appearance
Calcium carbonate