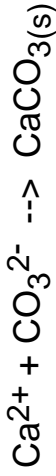


Reactions for the precipitation of CaCO₃

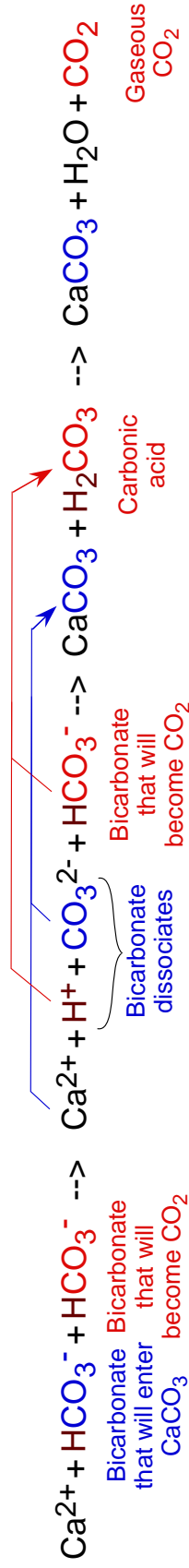
The ultimate fundamental chemical expression of the precipitation of CaCO₃ is this reaction:



However, the most abundant form of inorganic carbon in most natural waters is HCO₃⁻ rather than CO₃²⁻. Thus, to understand natural processes, the better chemical expression for the precipitation of CaCO₃ is this reaction:



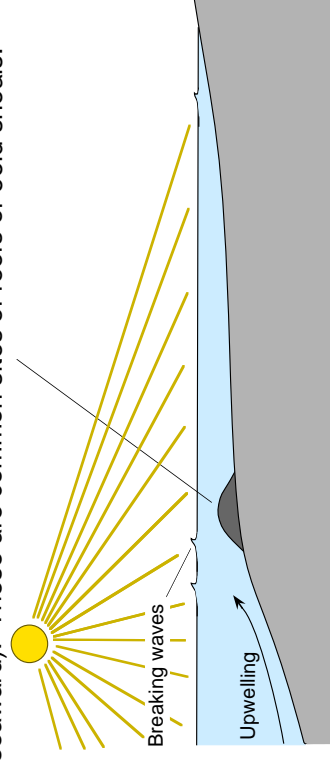
One should realize the two bicarbonate ions have very different fates. One goes into the CaCO₃ and the other is liberated as CO₂:



The reaction in bold letters shows that any natural process removing CO₂ from a solution favors precipitation of CaCO₃. That helps explain why CaCO₃ precipitates when

1. CO₂ degasses from dripwaters in caves,
2. CO₂ degasses from springs at which travertine forms,
3. CO₂ degasses at travertine dams,
4. CO₂ degasses with warming of seawater,
5. CO₂ degasses with agitation of seawater by waves,
6. CO₂ degasses with upwelling of seawater,
7. CO₂ is removed from water by photosynthesis.

In marine precipitation of CaCO₃, Processes 4 to 7 can all occur at shelf breaks (changes in slope from shallower landward to deeper seaward). These are common sites of reefs or ooid shoals.



There is a corresponding page titled "Reactions for the dissolution of CaCO₃".