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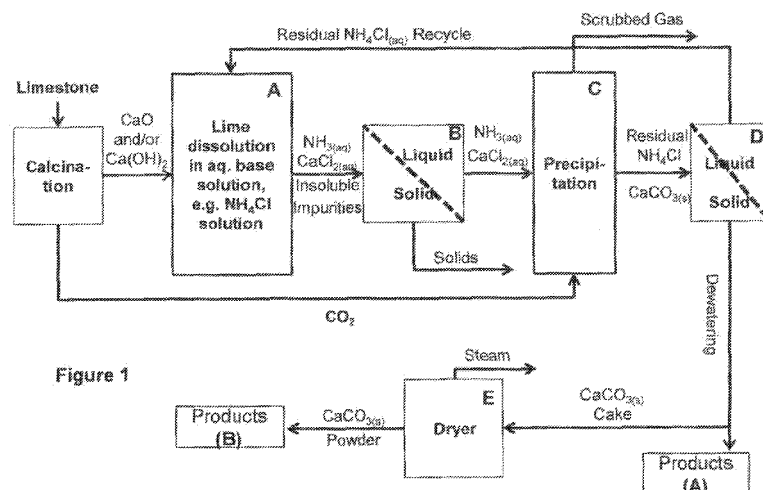


Figure 1

(57) Abstract: Provided herein are methods and systems to form calcium carbonate comprising vaterite, comprising dissolving lime in an aqueous base solution under one or more precipitation conditions to produce a precipitation material comprising calcium carbonate and a supernatant solution, wherein the calcium carbonate comprises vaterite.