

The study of producing  $\text{CaCO}_3$  via reverse microemulsion system with different surfactants

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When  $\text{CO}_2$  reacts with alkaline-earth materials, inorganic carbonate solids are produced. This is called the mineral carbonation process, and these products can be widely used in various fields. Calcium carbonate is frequently used in filler, especially in the paper and coating industries. Purity, brightness, particle size and morphology are decisive factors for industrial application of calcium carbonate. In this study, the influence of surfactant in crystal structure was investigated. With fixed concentration of sodium bicarbonate ( $\text{NaHCO}_3$ ) and calcium chloride ( $\text{CaCl}_2$ ) aqueous solutions, three surfactants (sodium stearate, CTAB and dextran) were used in each experiment. Using isooctane as an oil phase, the temperature was varied from  $20^\circ\text{C}$  to  $60^\circ\text{C}$  and the reaction was conducted. Then, the suspension was filtered using and rinsed thoroughly. Crystals were dried in the oven and the mass was measured to calculate the conversion ratio. The morphology and the particle size was determined using SEM images.