

Mineral carbonation of waste gypsum to produce solid carbonates for building applications (OLP-2305)

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Abstract

CO₂ sequestration is in undeveloped stage in India. No significant research group is working in the area of capture and storage of carbon di oxide by mineral carbonation of waste gypsum. Therefore, to address the gaps the proposed project will addressed two environmental problems simultaneously: management of industrial waste and GHGs emissions. In the proposed study, works will be carried out to use FGD gypsum/ phosphogypsum as the raw material for CO₂ sequestration. In addition, the effects of the ammonia/NaOH content, CO₂ flow rate, solid-to-solution (s/s) ratio on the carbonation reaction will be evaluated. NH₄OH/NaOH will be used as the basic media to perform the mineral carbonation of gypsum. This process can be simultaneously useful in the production of (NH₄)₂SO₄ or Na₂SO₄ and CaCO₃ when combined with NH₃ or NaOH. Then the precipitated calcium carbonate will be used for building applications. These products will be characterized by different sophisticated techniques such as FESEM, XRD and further.

Objective:To develop a process know how for mineral carbonation of waste gypsum and utilization of the carbonated products for building applications