SYNTHESIS OF CALCIUM CARBONATE POLYMORPHS FROM HYDRATED LIME

By : Agus Riyanto
Student Identity Number : 1109201714
Supervisor : Prof. Dr. Darminto, M.Sc.

ABSTRACT

Eastern Java has a separated abundance of limestone, some were known to have a high purity of calcite, but the high purity is less valuable due to its unnecessary purposes exploitation. Research was then conducted to synthesize various morphology of PCC from hydrated lime. Precipitation performed by bubbling a pure CO₂ gas into calcium hydroxide solution. Products of any treatments during the carbonation reaction were characterized by XRD and SEM. The results showed that phase and morphology of particles were sensitive to any treatments during the carbonation process. The formation of rhombic particles were preferably formed at low carbonation rate, otherwise, spherical vaterite formation tend to occur. Continues precipitation at 87 °C produced a nearly pure needle-like aragonite. Carbonation reaction was also applied into Ca(OH)₂ suspension and produced fine calcite particles of 0,8µm.

Keywords : limestone, precipitation, carbonation, morphology