

21/05

Wolastonite Synthesis From Rice Hull ASH

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A Rice hull ash (RHA) is a industry scrap rich in amorphous silica. A simple and low-energy cost method for the extraction of this silica was researched. A low level of impurity and high reactivity material was produced, which is appropriate for the synthesis of wolastonite (CaSiO_3). High purity wolastonite has many applications in manufacturing and agriculture. The mineral wolastonite can be formed in nature in different ways; it is generally accepted two forming processes, both encompassing limestone metamorphism (heat and pressure). In this work, a new process for the synthesis of wolastonite from RHA colloidal silica was developed. Moreover, the process is aimed at lower energy costs, fewer stages and fewer reactants consume. The first step of the wolastonite synthesis was studied, with the purpose of obtaining calcium hydrosilicate. Eleven different hydrosilicates occur in the system $\text{Ca(OH)}_2\text{-SiO}_2\text{-H}_2\text{O}$, in the second step, it was annealed to form the wolastonite phase.