

(54) Title of the invention : NOVEL GREEN ROUTE BIOMIMETIC SYNTHESIS OF CaCO₃ NANOPARTICLES FROM NATURAL CaMg(CO₃)₂

<p>(51) International classification :B01J 200200, B01J 201200, B09C 010000, B09C 010800, C01F 111800</p> <p>(86) International Application No :NA Filing Date :NA</p> <p>(87) International Publication No : NA</p> <p>(61) Patent of Addition to Application Number :NA Filing Date :NA</p> <p>(62) Divisional to Application Number :NA Filing Date :NA</p>	<p>(71)Name of Applicant : 1)Dr. V. RAMASWAMY Address of Applicant :PROFESSOR AND DEAN, DEPARTMENT OF PHYSICS, FACULTY OF SCIENCE, ANNAMALAI UNIVERSITY, ANNAMALAI NAGAR 608002, TAMILNADU, INDIA. -----</p> <p>2)Mr. E. THENPANDIYAN 3)Miss. T. SATHISHPRIYA</p> <p>Name of Applicant : NA Address of Applicant : NA</p> <p>(72)Name of Inventor : 1)Dr. V. RAMASWAMY Address of Applicant :PROFESSOR AND DEAN, DEPARTMENT OF PHYSICS, FACULTY OF SCIENCE, ANNAMALAI UNIVERSITY, ANNAMALAI NAGAR 608002, TAMILNADU, INDIA. -----</p> <p>2)Mr. E. THENPANDIYAN Address of Applicant :PH.D RESEARCH SCHOLAR, DEPARTMENT OF PHYSICS, FACULTY OF SCIENCE, ANNAMALAI UNIVERSITY, ANNAMALAI NAGAR 608 002, TAMILNADU, INDIA. -----</p> <p>3)Miss. T. SATHISHPRIYA Address of Applicant :PH.D RESEARCH SCHOLAR, DEPARTMENT OF PHYSICS, FACULTY OF SCIENCE, ANNAMALAI UNIVERSITY, ANNAMALAI NAGAR 608 002, TAMILNADU, INDIA. -----</p>
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(57) Abstract :

Calcium carbonate (CaCO₃) is one of the well-known and extremely important mineral in the Earth crust. It finds applications in the fundamental research and industry. It can be synthesized using chemical sources such as CaO₂, CaO, Ca(NO₃) and readily available natural sources such as Dolomite, Limestone, Calcite, Chalk, Cockle shells, Marble and Biological shells. Based on the pioneer researches, nano CaCO₃ was synthesized through various methods and sources which resulted some impurity, amorphous phase and low thermal stability of CaCO₃ in the range of 750 oC to 810 oC. In this proposed novel method, the green route biomimetic synthesis is selected for extraction of Ca²⁺ ions and synthesis of well crystalline rhombohedral, high yielded and good thermal stability CaCO₃ (Calcite) nanoparticles from naturally occurring impure CaMg(CO₃)₂ (Dolomitic rock) and which is collected from Arisipalayam village, Salem district, Tamilnadu, India. The proposed method is so cost effective, powerful and non-toxic and is used to filter or separate unnecessary impurities from dolomite rock (impurity such as Mg, Na, K, Al and Si) and to get only the expected product in pure form of nano CaCO₃. It is worth mentioning that the thermal stability of nano CaCO₃ is 840 oC, which was achieved in this study. It is understood from the existing literature that the proposed green route biomimetic synthesis is successful way to extract and synthesis of high thermal stability nano CaCO₃ from natural CaMg(CO₃)₂ of unique and first of its kind. The prepared high thermal stability nano CaCO₃ is suitable potential candidate for various industrial related applications.

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