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Rapid and clean methodology to synthesize alcoholic suspensions of calcium hydroxide nanoparticles

Juan Antonio Madrid¹ and Marcos Lanzón²¹National Center of Reference for Chemical VET, Spain²Universidad Politécnica de Cartagena, Spain

The use of alcoholic suspensions of calcium hydroxide nanoparticles as consolidant for natural stone is widely accepted, mainly in Cultural Heritage Conservation. In the present experimental work, two easy synthetic procedures leading to pure Ca(OH)₂ nanoparticles in 2-propanol are compared. CaCO₃ and Ca(OH)₂ were used as starting materials to obtain CaO following two different paths using the same calcinations temperatures. In both cases, CaO was used to obtain suspensions of Ca(OH)₂ nanoparticles by addition to 2-propanol while sonicated. The nanoparticles were studied by transmission electron microscopy (TEM) and the stability of suspensions was monitored by Nephelometry (NM). The proposed methods can be implemented in industry because they are fast and easy to scale up. On the other hand, the methods yield pure Ca(OH)₂ and avoid the production of by-products, such as NaCl that require additional purification treatments.

Biography

Juan Antonio Madrid is MSc in Chemistry and has 20 years of experience on Chemical R&D and Vocational Education and Training (VET). He is completing the Doctorate. Since 2015, he is the Director of the National Center of Reference for Chemical VET (Spain). From 2004 to 2015, he worked as a Professor of Industrial Chemistry and Chemical Analysis. From 1998 to 2004, he was working at General Electric Plastics in the R&D department. Before that, he worked in a pharmaceutical company for 2 years.

juanantonio.madrid@yahoo.es
juana.madrid@carm.es

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