l llN AL- HAITHAM J.I'OH I'U RE & APPL. SCI. V0L.I9(4) 2006

Studying the Connection Between Partical Size and Lattice Distortions Through X - Ray Diffraction Line Profile Analysis for CaO Powder

K .H .Harbi

Department of Physics, College of Education Ibn AI­

Hai t h am University of Bagh dad .

Abstract

The integral breadth method has been utilized to analyse line

proIiles broadening and lattice strain of CaO at different temperatures

The effect of tcmperattre on crystallite size and strain has also been investigated . The crystall i tes are found to be highly anisotropic even at high temperatures .

Introduction

*1\* detai led knowledge of crystallite size and strain in a finely

divided powder often helps to correlate many physical properties of a system under going transformation and solid - state reactions . X - Ray line broadening analysis provides a method of finding crystallite size and strain integral breadth methods ( I -4 ) .

Calcium oxides have been imponant applications in manufacuturing (

*5* - 8 ) . The present investigation aims were to find the variation of

crystallite size and strain with temperat ure after correction li ne profile

Experimental

In this work, calcium carbonate was used to produce calcium oxide by treatment ofCaC0.1 at 1 100 •c , 1150 •c and 12000C . The

calcination time is chosen as 30 minutes for each run under static air , heating rate of I o•c /min and a·alumina as reference material .

Diffraction pattren for the three samples were obtained using Philips automatic powder diffractometer (pwl820) with flat monochromator , step rate 0.02/l .Oec. Specimens were prepared by mounting

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