

# STUDIES ON THE KINETICS OF DECOMPOSITION OF INDIAN MAGNESITES

J.Singh<sup>1</sup>, N. Bandyopadhyay<sup>2</sup>, T.K. Parya<sup>3</sup>, P. Kumar<sup>c</sup> and S. Maitra<sup>4</sup>

<sup>1</sup>SGSJ Govt. Polytechnic, Khurja-203131(U.P), India

(e- mail: [js.yadav2006@gmail.com](mailto:js.yadav2006@gmail.com)),

<sup>2</sup>Dept. of Ceramic Technology, Govt. College of Engineering and Ceramic Technology, Kolkata-700010

e-mail: [bandyopadhyay\\_n@rediffmail.com](mailto:bandyopadhyay_n@rediffmail.com)),

<sup>3</sup>Dept. of Chemical Technology, University of Calcutta, Kolkata-700009, India

(e-mail: [tapanparya@yahoo.co.in](mailto:tapanparya@yahoo.co.in); e-mail: [pksingh166@rediffmail.com](mailto:pksingh166@rediffmail.com));

<sup>4</sup>Dept. of Chemical Engineering, Universiti Teknologi PETRONAS, Tronoh-31750, Malaysia

(Author for correspondence, e-mail: [maitrasaikat@rediffmail.com](mailto:maitrasaikat@rediffmail.com) )

## ABSTRACT

Decomposition behaviour of two magnesite samples of Indian origin having different grain morphology was studied. The samples were taken in powder form and kinetic parameters for the decomposition reactions were evaluated from the non-isothermal studies, using thermogravimetry and employing different heating rates. Integral approximation method was used to calculate the kinetic parameters. It has been observed that the decomposition temperature and activation energy for the decomposition reaction of the samples varied to some extent with the variation in grain morphology and impurity content. The decomposition reactions were found to follow contracting sphere mechanism.

**KEYWORDS:** Magnesite, Decomposition, Kinetics, Non-Isothermal, Thermogravimetry