

## ABSTRACT

"More we know, better we understand"-Research effort to determine aspect ratio of disc shaped (or platy) Nano particles can be a key factor in determining the functionality of the end use of various industrial products; for example: paper, decorative and functional coatings, plastics and ceramics, etc. Aspect Ratio is defined generally as the ratio of the major axis dimension to that of the minor dimension. These disc or platy like minerals expose different surface properties, based on the orientation of the particulate in respect to its morphology. Quantifying the aspect ratio of these minerals may help to understand processing of minerals, end-use function or rheological behaviors of a particulate suspension.

Work have been done to measure or determine the aspect ratio of platy like particles, using various techniques. Our research is aimed to find an efficient and faster way to determine aspect ratio. An empirical and mathematical relationship is expected to be derived from frequency of intensity variation of particles in Brownian motion (as observed using Nano-sight instrument) and aspect ratio, exemplified with laponite, hydrotalcite, and zirconium phosphate.

## BIOGRAPHY

Sayantan Das (SD) is currently a Doctoral Student in the Materials Science, Engineering, and Commercialization program at Texas State University-San Marcos. He attained his master's degree in Applied Mathematics from The University of Texas-Pan American where he worked with Dr. Daniel Riahi on "Modeling instabilities of Electro-spinning process ". SD received his bachelors in Electrical-Engineering from his hometown Kolkata "city of joy", India.

SD's research interests include Nanotechnology, Mathematics and Commercialization. He is currently working with Dr. Gary Beall on "Determining aspect ratio of Nano-sized platy minerals" and simultaneously plans to work with Dr. Mark Holtz to "Determine surface morphology of Nano-sized platy minerals using Raman Spectroscopy". His dissertation work will attempt to provide an efficient and fast characterizing technique of platy particles.

SD lives in San Marcos, TX. When not working, interested in Fitness, Food& Mind.

