

0  
530  
KRI

am

**DRYING BEHAVIOR OF FEW COMMERCIALY AVAILABLE  
PAINT SAMPLES USING  
DYNAMIC LIGHT SCATTERING**

A PROJECT REPORT PRESENTED BY

L.H.CHARITH KRISHANTHA

to the Board of Study in Physics of the  
**POSTGRADUATE INSTITUTION OF SCIENCE**

*in partial fulfillment of the requirement  
for the award of the degree of*

**MASTER OF SCIENCE IN PHYSICS OF MATERIALS**

of the

**UNIVERSITY OF PERADENIYA**

**SRI LANKA**

**2010**



# DRYING BEHAVIOR OF FEW COMMERCIALY AVAILABLE PAINT SAMPLES USING DYNAMIC LIGHT SCATTERING

**L.H.C.Krishantha**

Postgraduate Institution of Science

University of Peradeniya

Peradeniya

Sri Lanka

2010

Determination of microscopic molecular distribution and thermodynamics random motions of polymeric paint samples is very important to evaluate the properties of samples. The main objectives of present study were to evaluate the drying behavior of different paint samples by concerning the variation of diffusion coefficient with respect to time.

The Dynamic Light Scattering method was used to analyze the molecular distribution which undergoing Brownian motion. MS Excel, Minitab, and Origin were used as statistical analysis software. The oscilloscope (HM507) was used as data acquisition device and performed as converter analog data to digital. The information of present study was extracted from three commercially available paint samples (Sample A, Sample B and Sample C) with different number of layers (first layer and second layer) that were in different drying conditions (exclusive air columns, 5 cm air columns and 7.5 cm air columns).

The variation of diffusion coefficient reflects the drying process of the three white coloured paint samples. It can depict the variation of drying process of different paint samples with different air columns. There were significant drying behavior differences between groups and within groups. The diffusion coefficient variation of first layer of all three paint groups showed exponential decay pattern while the second layer showed smooth or sharp parabolic models. There were comparatively differences between paint samples C that is appropriate for dry and harsh environment while Sample A can be used for wet and moisturizing environments that are higher in relative humidity. The sample B can be recommended to both dry and wet climate.