Film Thickness Measurement Experiment

**Mass Determination**

Substrate mass without film = M1

 Substrate mass with film = M2

Mass of the film = Mfilm = (M2 – M1)

**Volume Determination**

Area of standard square = As

Area of the film = Af

Area of the standard square in real scale = R

Then, area of the film in cm scale

Let, the hight (or thickness) of the film be **h**

Volume of the film = A. h

And density D

**Thickness Determination**

Experiment 1:

|  |  |
| --- | --- |
|  |  |
| Normal Image | Finding Edge using ImageJ |

|  |  |
| --- | --- |
| M1 = | 2.189 g |
| M2 = | 2.195 g |
| Mfilm = (M2 – M1) = | 0.006 g |
| As = | 1015920 |
| Af = | 517878 |
| A = | = **2.039** |
| D = | 4.23 g/cm3 (rutile)  3.78 g/cm3 (anatase) |
| h = | **0.0006956546**  **= 6.96 µm (for rutile)**  **0.0007784706**  **= 7.78 µm (for anatase)** |

|  |  |
| --- | --- |
|  |  |
| Area (with line) | Area |

IMG\_20200318\_201002.jpg 59 1.425 0.024 29.252 255 0.215 0.608

IMG\_20200318\_201002.jpg 37 1.383 0.037 28.400 255 0.174 0.559