

OBSERVATIONS :-

| S. No | Distance (D) | Diffraction order (n) | Radius of dark ring (r_n) | Particle Size (2a) |
|-------|--------------|-----------------------|-------------------------------|---------------------------------|
| Unit | m | | m | m |
| 1 | 11 | 1 | 1.5 | 5.6614×10^{-6} |
| | | 2 | 3.4 | 4.9953×10^{-6} |
| 2 | 13 | 1 | 1.6 | 6.2726×10^{-6} |
| | | 2 | 3.7 | 5.4249×10^{-6} |
| 3 | 15 | 1 | 1.9 | 6.0948×10^{-6} |
| | | 2 | 3.8 | 6.0948×10^{-6} |
| Mean | | | | $5.7 \times 10^{-6} \text{ Nm}$ |

Calculation:

1. When $D = 11$; $r_n = 1.5, 3.4$; $n = 1, 2$

$$2a = \frac{1.22 \times 1 \times 6328 \times 10^{-10} \times 11 \times 10^{-2}}{1.5 \times 10^{-2}} = 5.6614 \times 10^{-6}$$

$$2a = \frac{1.22 \times 2 \times 6328 \times 10^{-10} \times 11 \times 10^{-2}}{3.4 \times 10^{-2}} = 4.9953 \times 10^{-6}$$

2. When $D = 13$; $r_n = 1.6, 3.7$; $n = 1, 2$

$$2a = 6.2726 \times 10^{-6} ; 2a = 5.4249 \times 10^{-6}$$

3. When $D = 15$; $r_n = 1.9, 3.8$; $n = 1, 2$

$$2a = 6.0948 \times 10^{-6} ; 2a = 6.0948 \times 10^{-6}$$