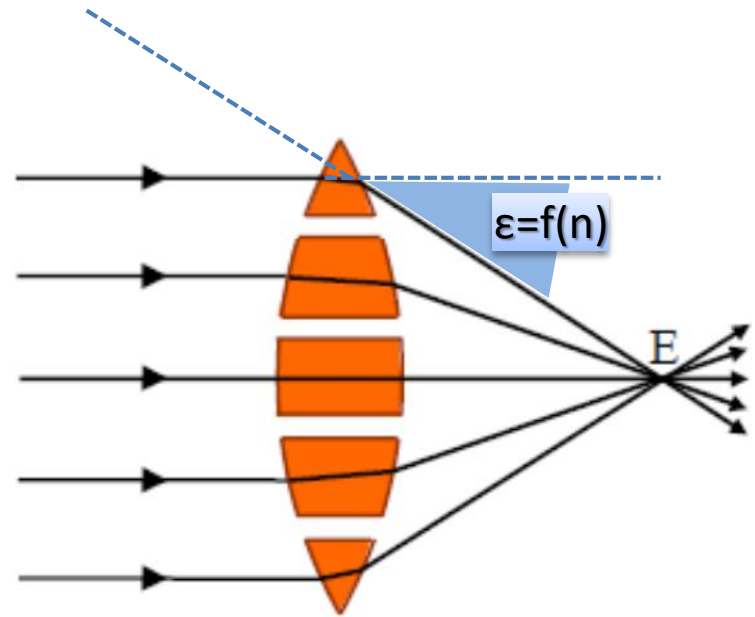
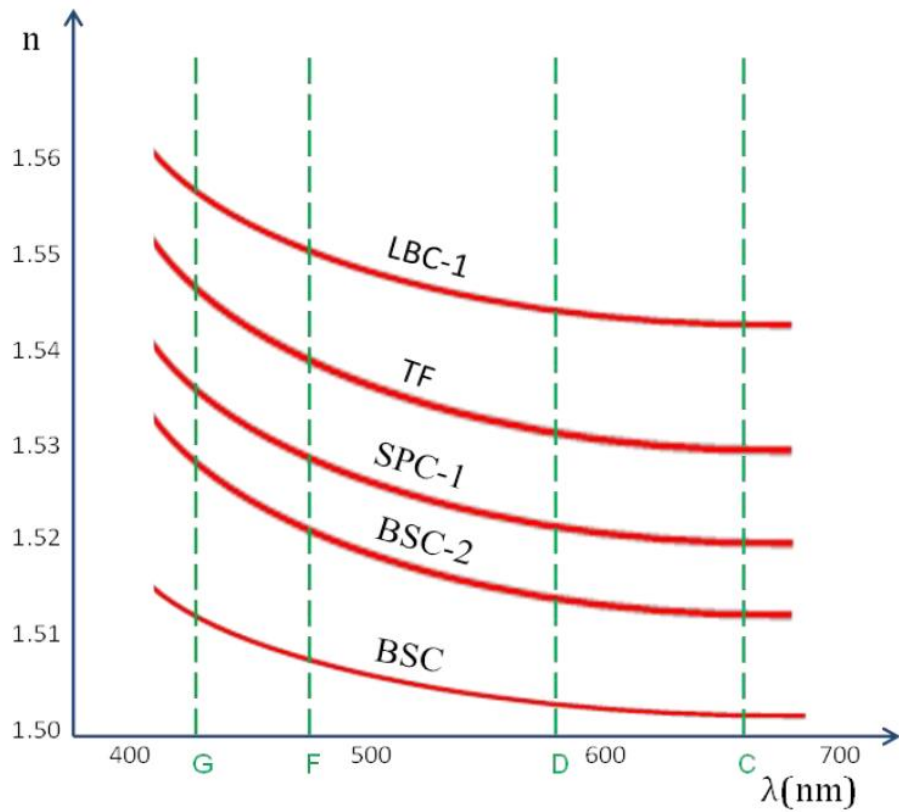


# ΣΦΑΛΜΑ ΧΡΩΜΑΤΙΚΗΣ ΕΚΤΡΟΠΗΣ



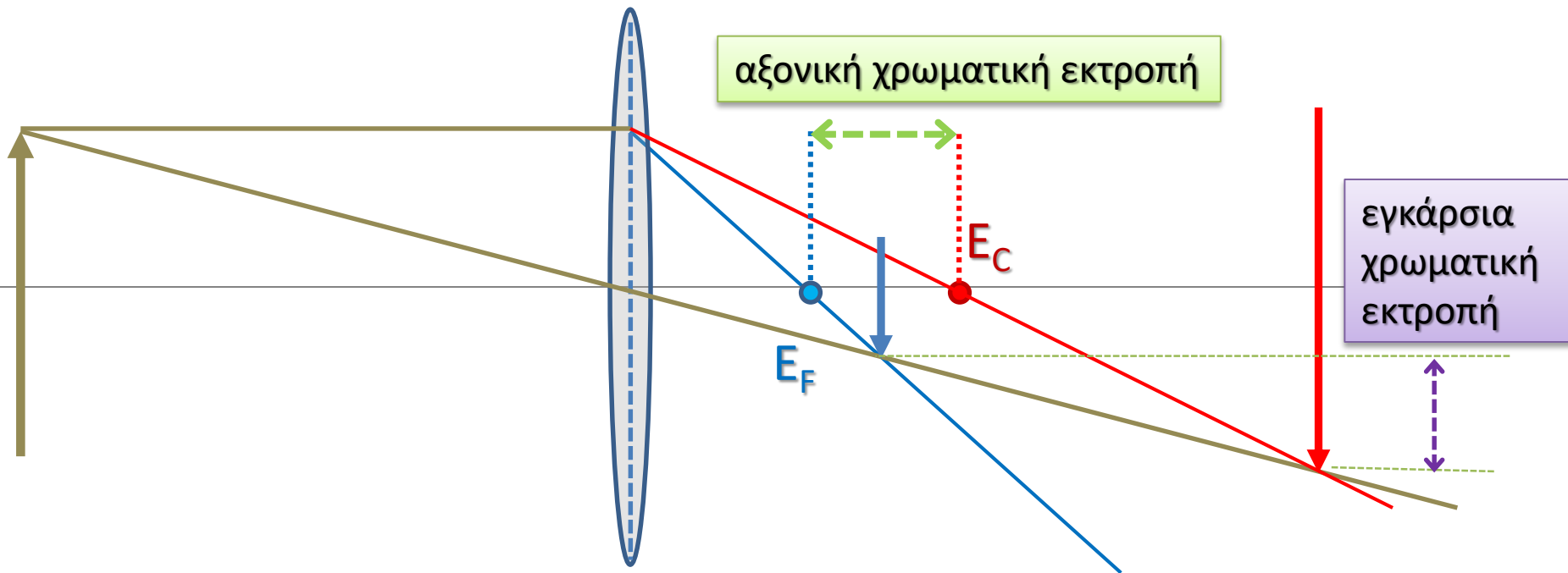
[https://en.wikipedia.org/wiki/Chromatic\\_aberration](https://en.wikipedia.org/wiki/Chromatic_aberration)



$\epsilon(\text{ιώδες}) > \epsilon(\text{ερυθρό})$

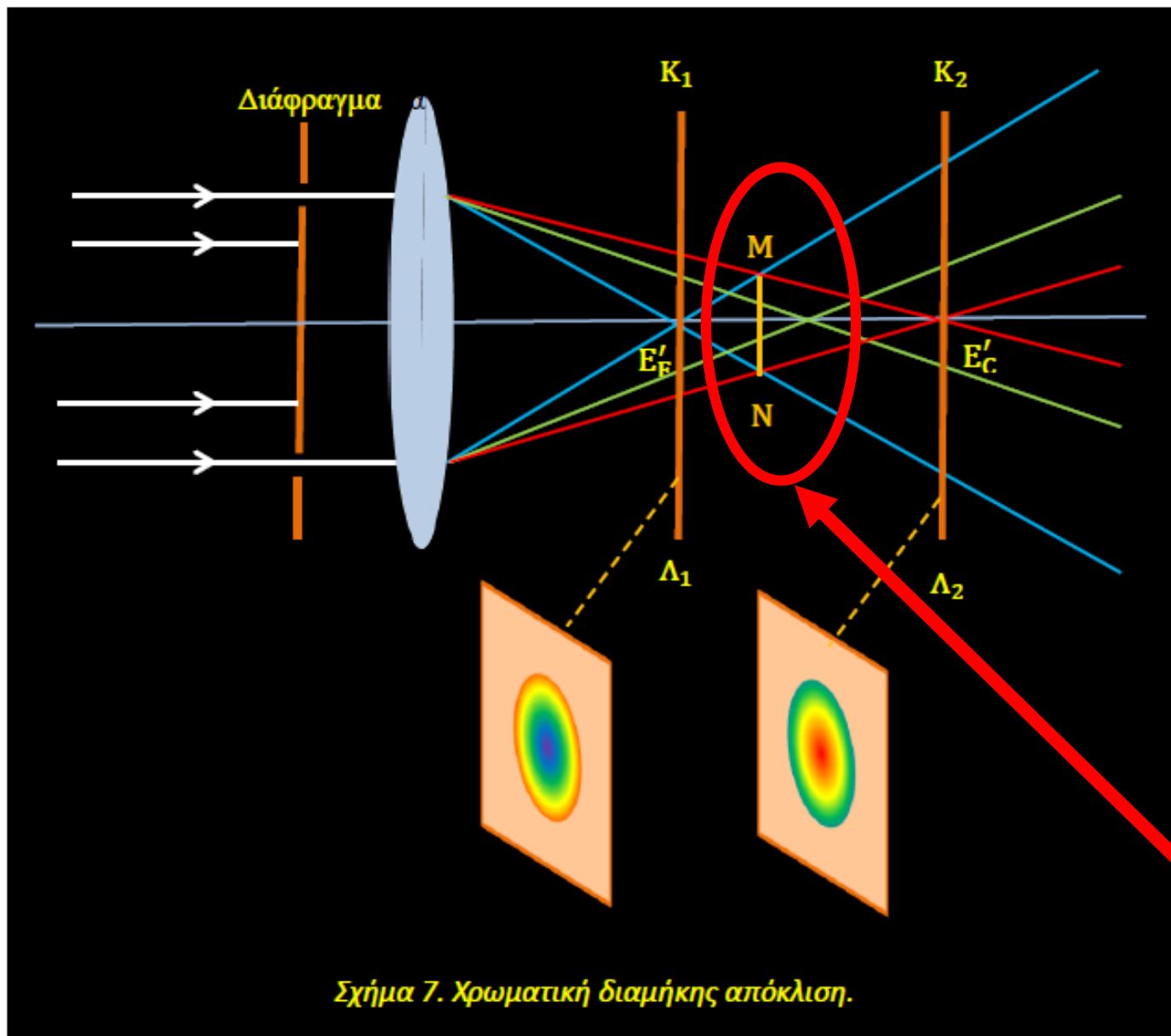
$f(\text{ιώδες}) < f(\text{ερυθρό})$

# ΣΦΑΛΜΑ ΧΡΩΜΑΤΙΚΗΣ ΕΚΤΡΟΠΗΣ



αξονική ή διαμήκης χρωματική εκτροπή

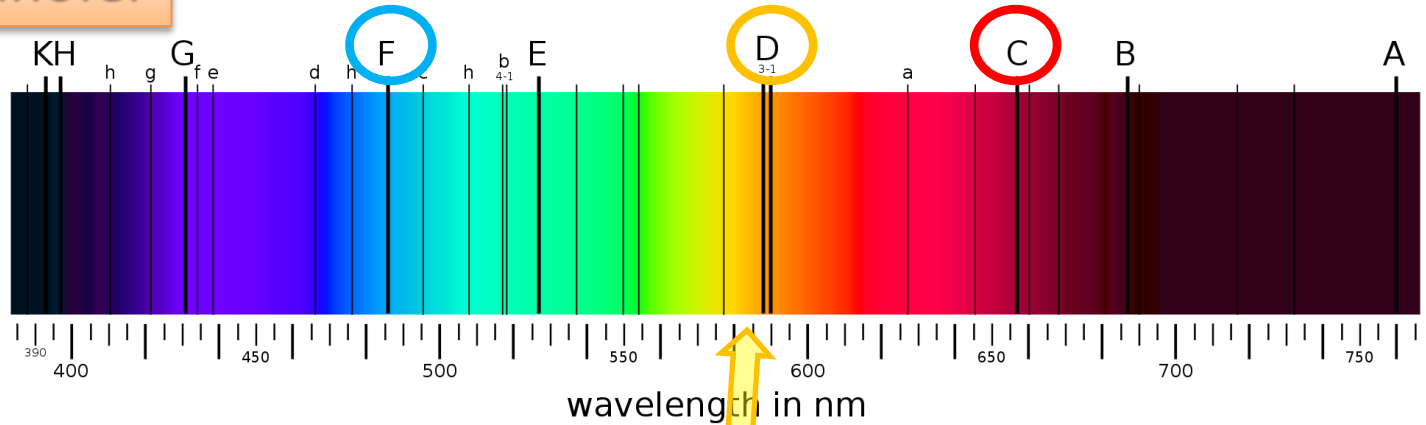
$$A = f_C - f_F$$



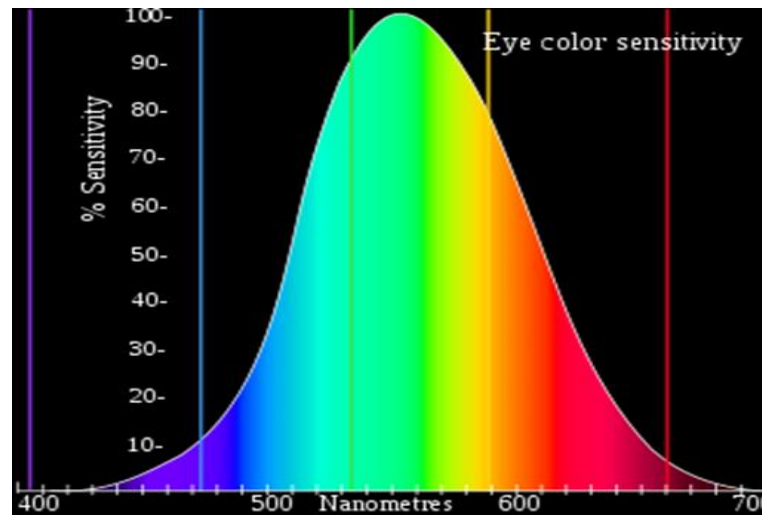
$MN$  : δίσκος ελάχιστης συγχίσεως

# Προσδιορισμός της αξονικής χρωματικής απόκλισης

## Γραμμές Fraunhofer



[https://en.wikipedia.org/wiki/Fraunhofer\\_lines#/media/File:Fraunhofer\\_lines.svg](https://en.wikipedia.org/wiki/Fraunhofer_lines#/media/File:Fraunhofer_lines.svg)



[https://en.wikipedia.org/wiki/Abbe\\_number](https://en.wikipedia.org/wiki/Abbe_number)

# Προσδιορισμός της αξονικής χρωματικής απόκλισης

$$\frac{1}{f_C} = (n_C - 1) \left( \frac{1}{r_1} - \frac{1}{r_2} \right)$$

$$\frac{1}{f_F} = (n_F - 1) \left( \frac{1}{r_1} - \frac{1}{r_2} \right)$$

$$\frac{1}{f_F} - \frac{1}{f_C} = (n_F - n_C) \left( \frac{1}{r_1} - \frac{1}{r_2} \right)$$

$$A \leftarrow \frac{f_C - f_F}{f_F \cdot f_C} = (n_F - n_C) \left( \frac{1}{r_1} - \frac{1}{r_2} \right)$$

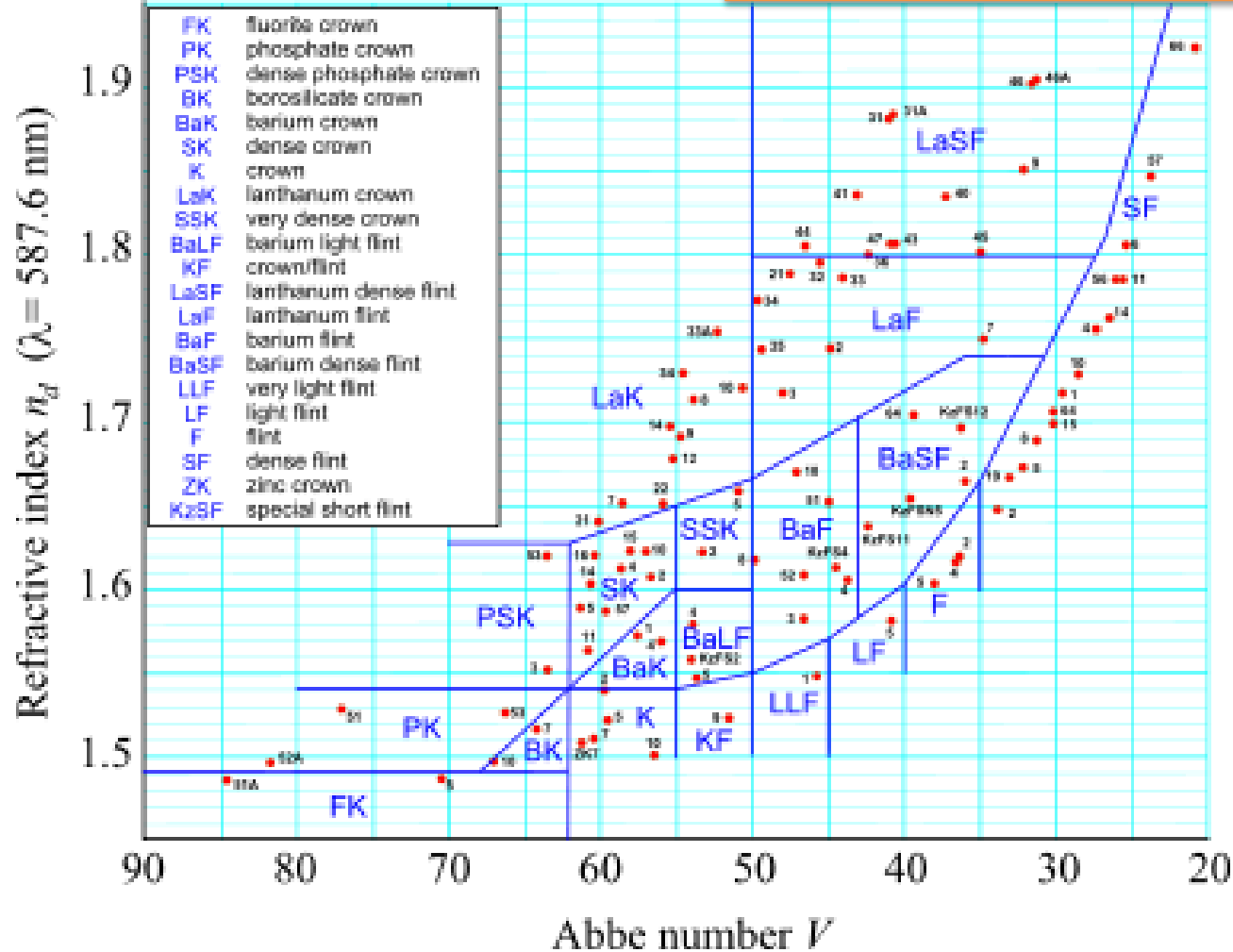
$f_D^2$  ←

$$\frac{1}{f_D} = (n_D - 1) \left( \frac{1}{r_1} - \frac{1}{r_2} \right) \Rightarrow \left( \frac{1}{r_1} - \frac{1}{r_2} \right) = \frac{1}{(n_D - 1) \cdot f_D}$$

$$\frac{A}{f_D^2} = (n_F - n_C) \frac{1}{(n_D - 1)} \cdot \frac{1}{f_D} \Rightarrow A = \frac{n_F - n_C}{n_D - 1} \cdot f_D = \omega \cdot f_D$$

# αριθμός του Abbe V (V-number)

$$V = \omega^{-1} = \frac{n_D - 1}{n_F - n_C} = \frac{f_D}{A}$$



[https://en.wikipedia.org/wiki/Abbe\\_number](https://en.wikipedia.org/wiki/Abbe_number)

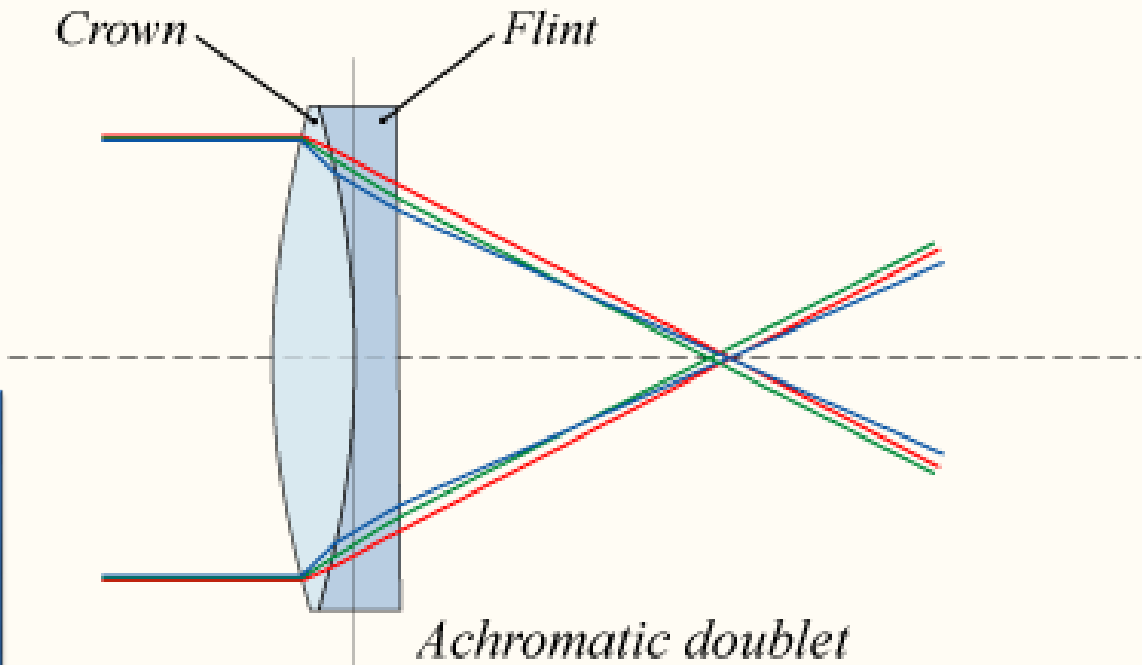
# ΑΧΡΩΜΑΤΙΚΟΙ ΦΑΚΟΙ

εξουδετέρωση χρωματικής απόκλισης :  $f_C^\Sigma = f_F^\Sigma$

$$f_D \cdot V + f_D' \cdot V' = 0$$

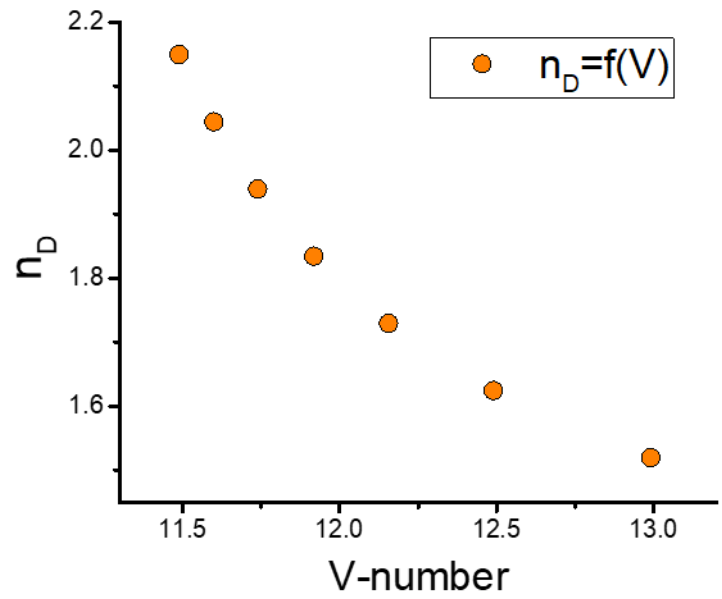
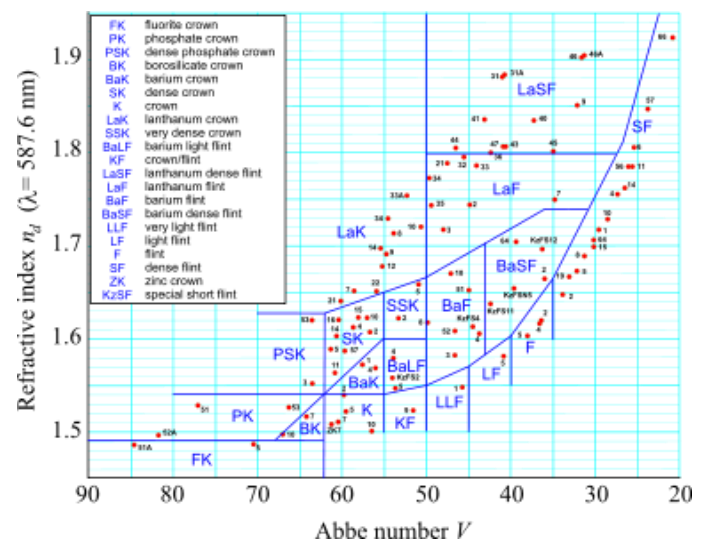
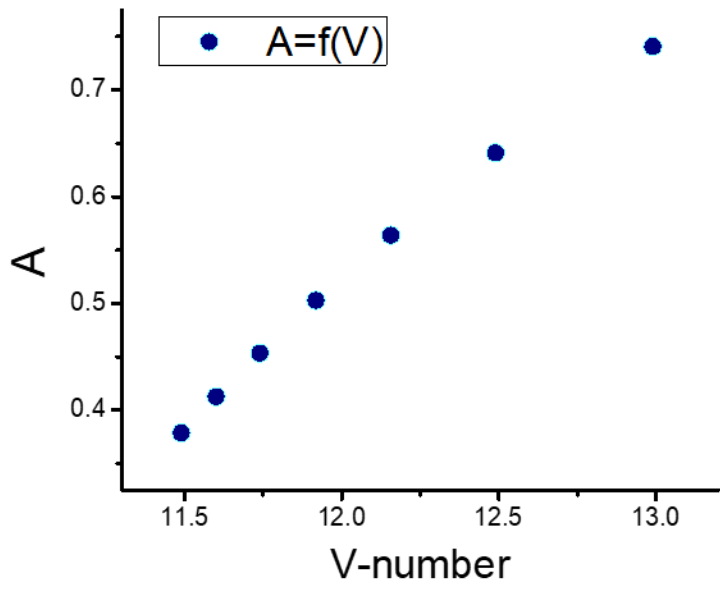
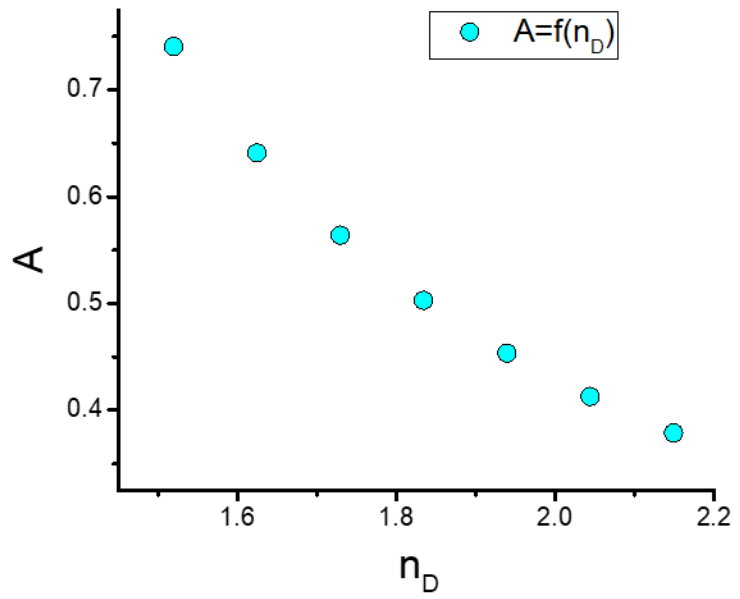


Οι  $f_D$  &  $f_D'$  έχουν αντίθετο πρόσημο [συγκλίνων (+) & αποκλίνων (-)]





# Σχετικά με τα διαγράμματα της εργαστηριακής άσκησης



# ΧΡΗΣΙΜΕΣ ΥΠΟΔΕΙΞΕΙΣ

$$\frac{1}{f} = (n - 1) \left( \frac{1}{r_1} - \frac{1}{r_2} \right)$$

$$\frac{1}{r_1} - \frac{1}{r_2} = \frac{1}{10} - \frac{1}{-10} = \frac{2}{10} = \frac{1}{5}$$

$$\frac{1}{f} = \frac{n - 1}{5}$$

$$n_C \rightarrow f_C = \frac{5}{n_C - 1}$$

$$n_F \rightarrow f_F = \frac{5}{n_F - 1}$$

$$n \cdot \eta_{\mu\alpha} = 1 \cdot \eta_{\mu\delta} \Rightarrow n = \frac{\eta_{\mu\delta}}{\eta_{\mu\alpha}}$$

$$\eta_{\mu\alpha_C} \text{ \& } \eta_{\mu\delta_C} \rightarrow n_C$$

$$\eta_{\mu\alpha_D} \text{ \& } \eta_{\mu\delta_D} \rightarrow n_D$$

$$f_D = \frac{5}{n_D - 1} \Rightarrow n_D - 1 = \frac{5}{f_D} \Rightarrow n_D = \frac{5}{f_D} + 1$$