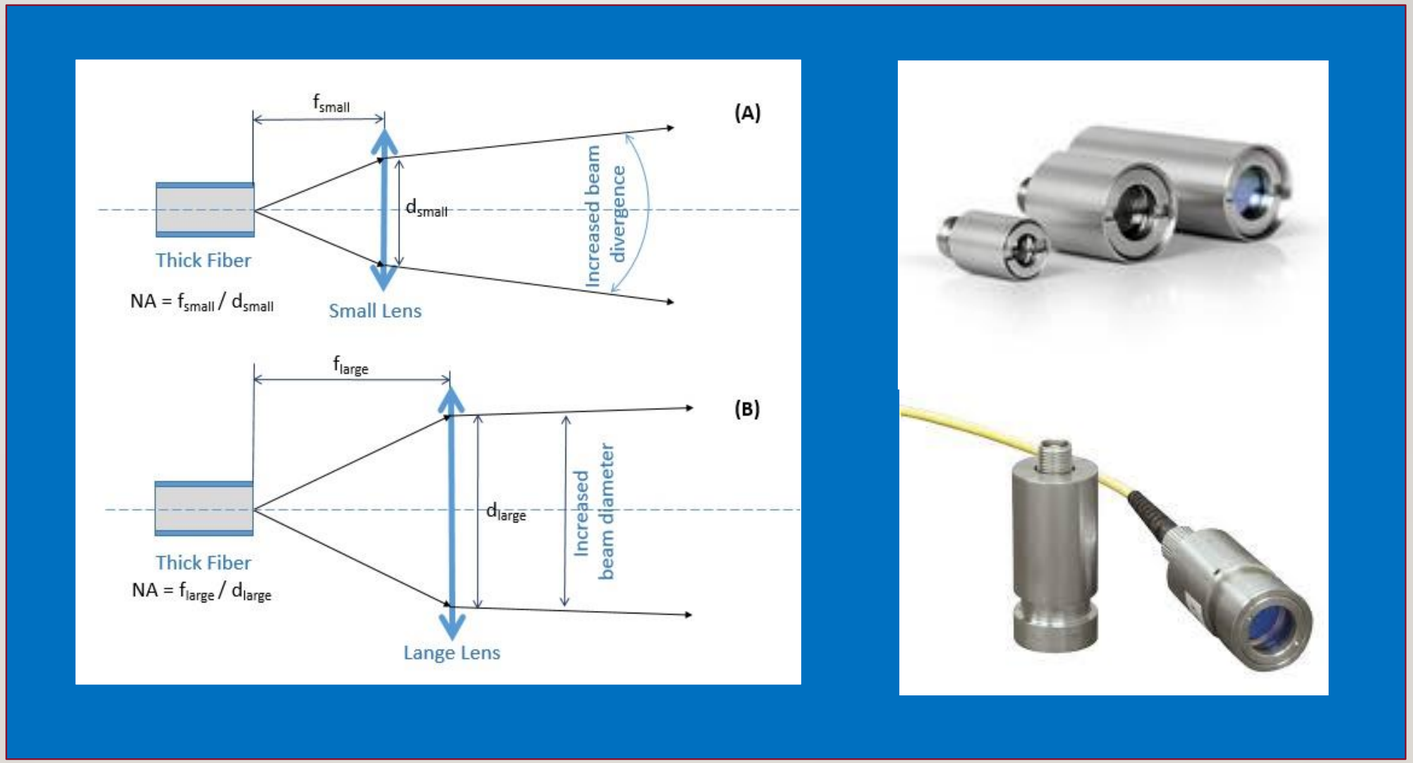
SISTEM KOMUNIKASI OPTIK

- MATERI 8
- **PENINGKATAN GANDENGAN**

- D3 Teknologi Telekomunikasi – Fakultas Ilmu Terapan

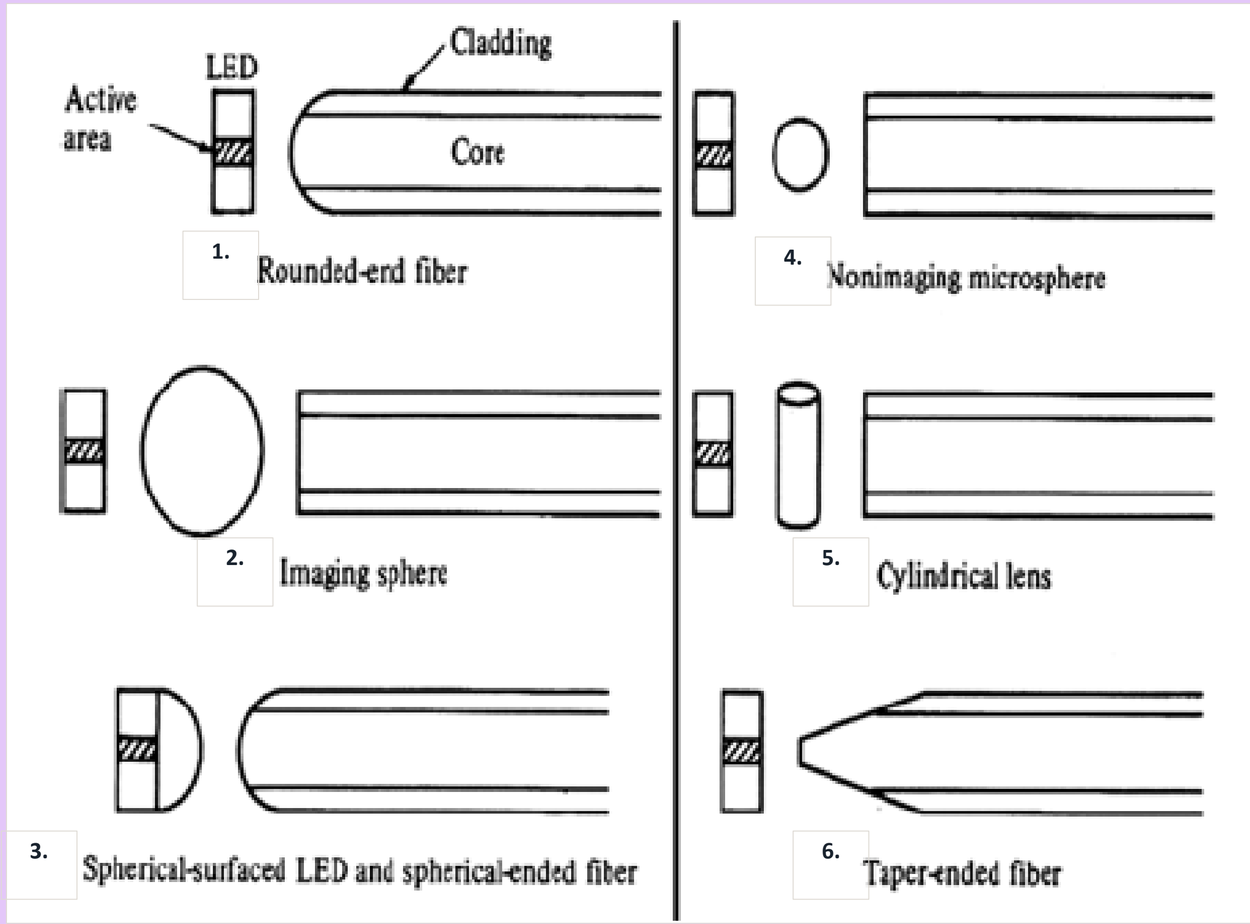
PENINGKATAN GANDENGAN

Fiber Collimator



Sumber Referensi :
https://www.prizmatix.com/Optics/Collimator.htm
https://www.lasercomponents.com/de-en/product/fiber-collimator/
Sumber Referensi: Gerd,Keiser.,2010, *Optical Fiber Communications*, 4th edition,McGraw Hill, International Edition

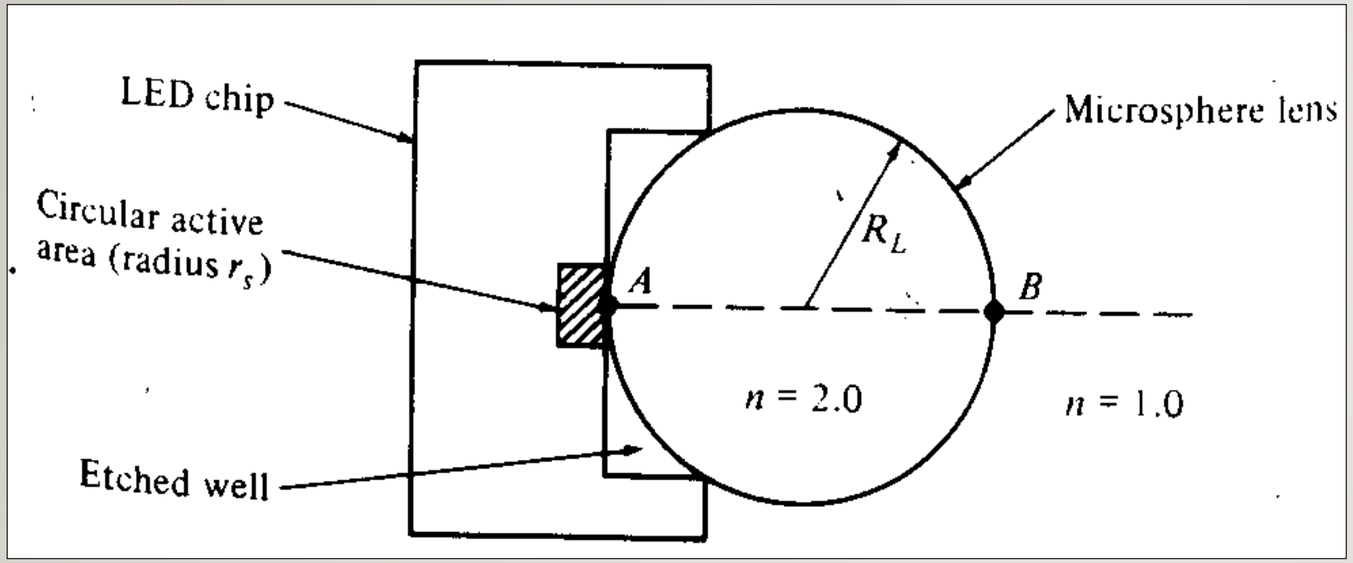
SKEMA PELENSAAN UNTUK PENINGKATAN GANDENGAN



Sumber Referensi :

Sumber Referensi: Gerd,Keiser.,2010, *Optical Fiber Communications*, 4th edition,McGraw Hill, International Edition

MICROSPHERE NON IMAGING



Gambar . LED Dengan Lensa Microsphere

$$\frac{n}{s} + \frac{n'}{q} = \frac{n'-n}{r}$$ ...Pers.1

Dimana :
n = indeks bias lensa,
n' = indeks bias medium
s = jarak objek
q = jarak bayangan,
r = jari-jari permukaan lensa.

Jika q = ~ dan
Nilai s diukur dari titik B, n = 2,0 , n' = 1,0 dan r = $-R_L$, maka : **$s = f = 2\,R_L$**

Sumber Referensi :
Sumber Referensi: Gerd,Keiser.,2010, *Optical Fiber Communications*, 4th edition,McGraw Hill, International Edition

PENINGKATAN GANDENGAN

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- **Perbesaran daerah emisi M :**

$$M = \frac{\pi R_L^{\,2}}{\pi r_s^{\,2}} = \left(\frac{R_L}{r_s}\right)^2$$

- **Daya dpt di gandeng ke fiber dgn sudut penerimaan penuh 2θ :** $P_L = P_S \left(\frac{R_L}{r_s}\right)^2 \sin^2\theta$

P_S : daya keluaran total sumber tanpa lensa

- **Efisiensi gandengan maksimum :**

$$\eta_{\max} = \begin{cases} \left(\frac{a}{r_s}\right)^2 (NA)^2 & \text{utk} \quad \frac{r_s}{a} > NA \\ 1 & \text{utk} \quad \frac{r_s}{a} \le NA \end{cases}$$

Sumber Referensi :

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