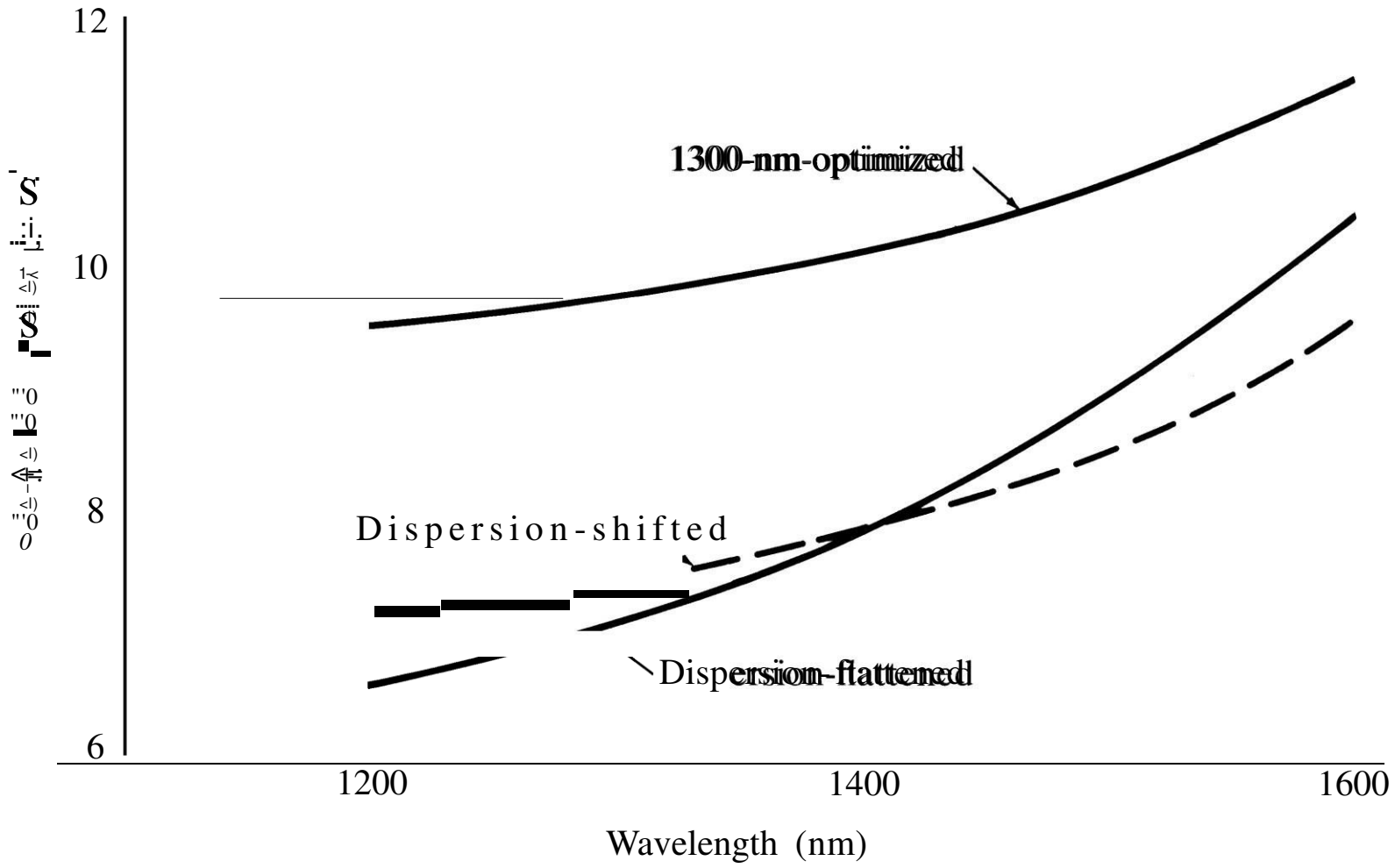
Unit-2

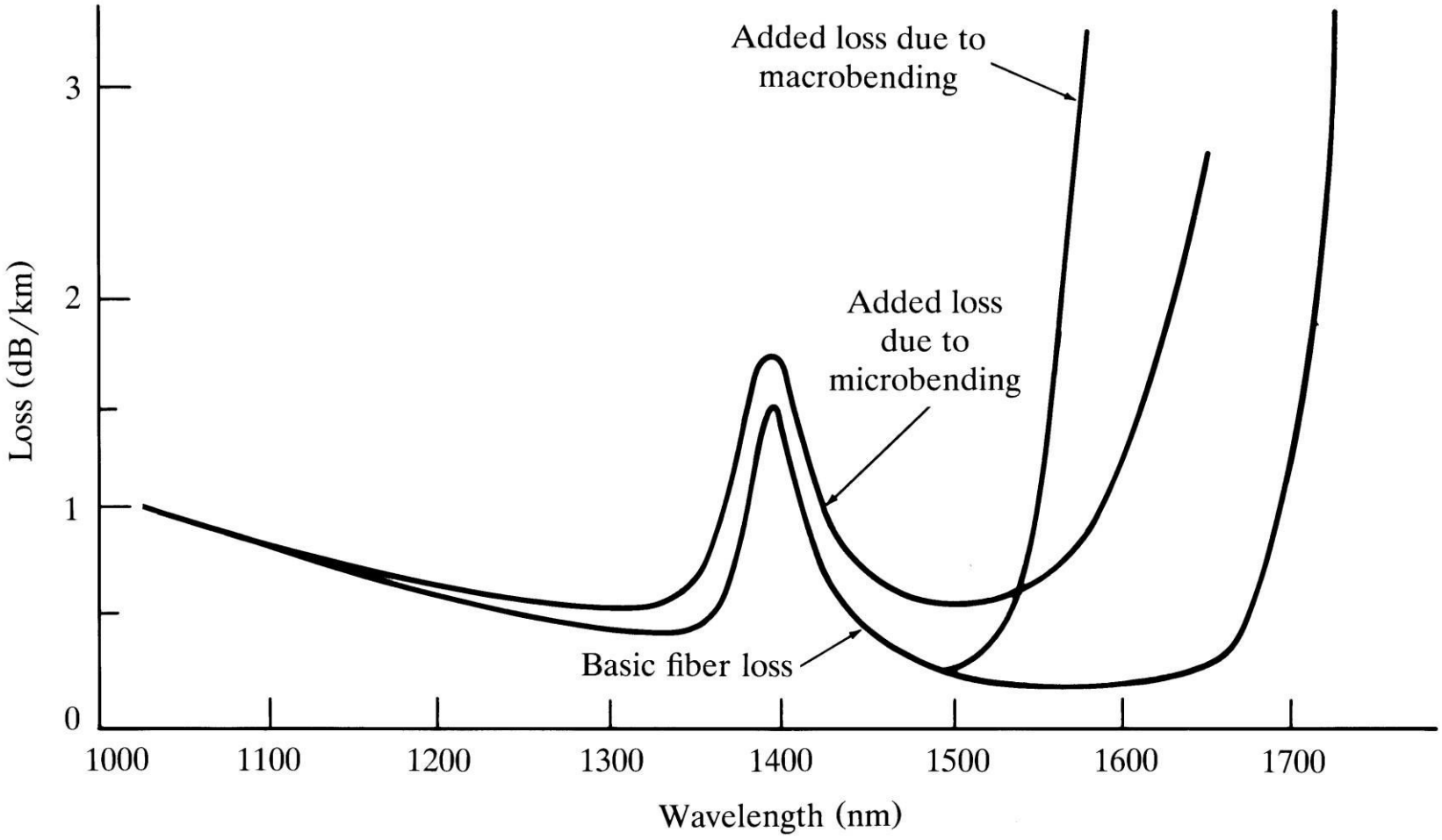
Lecture -7

Mode Field Diameter, Kerr Effect, Non Linear Effect

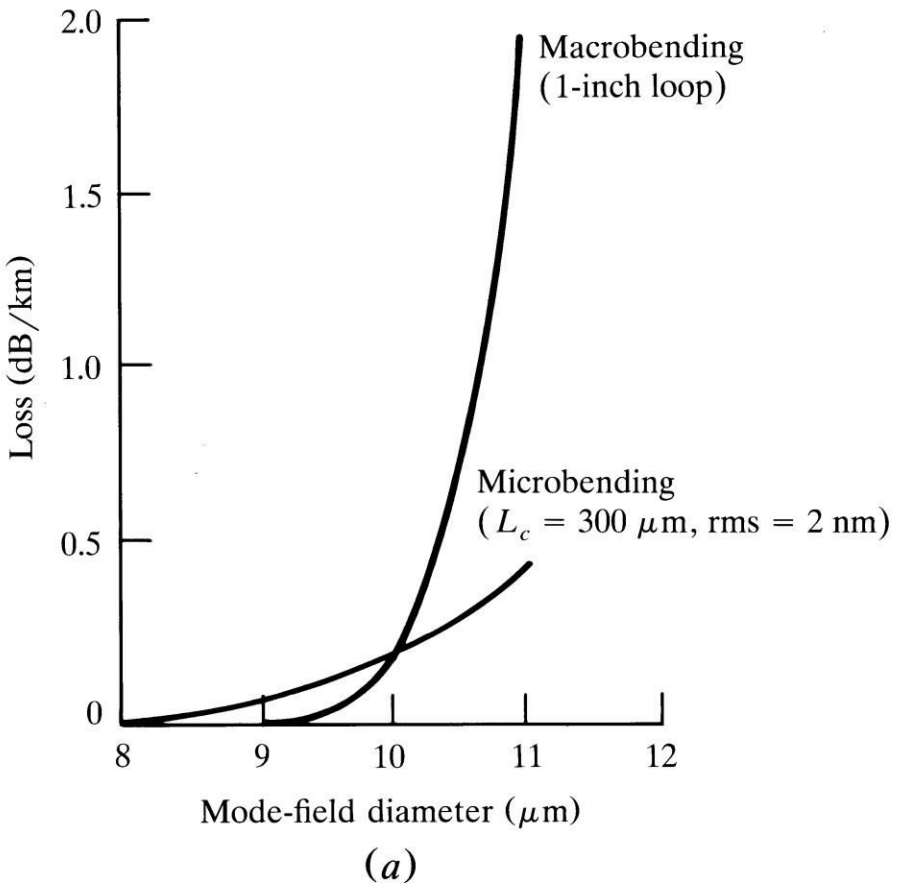
MFD

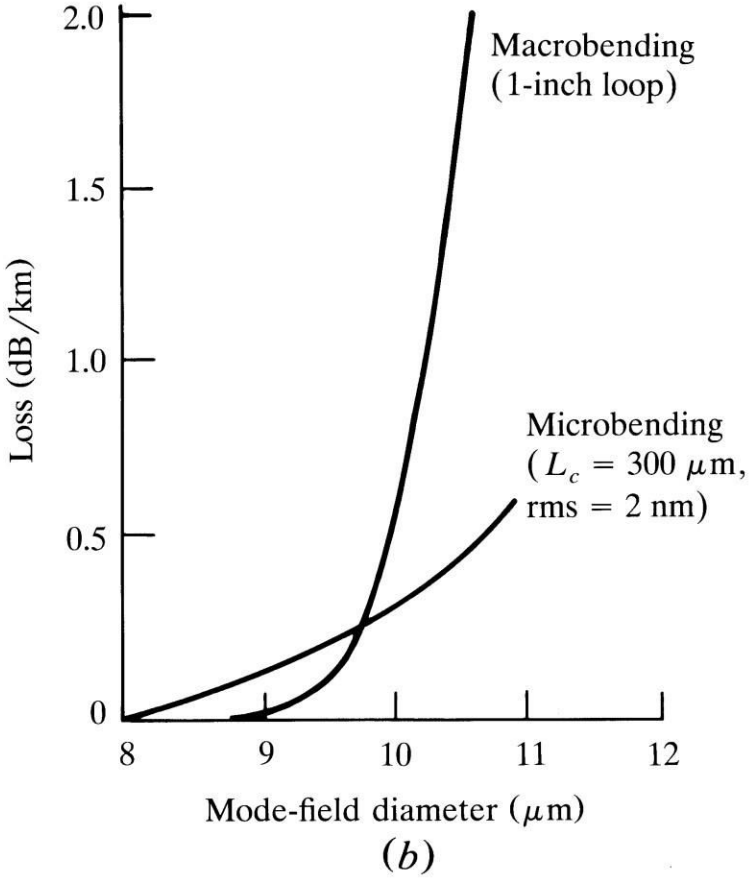

12
10
8
6
1300-nm-optimized
Dispersion-shifted
Dispersion-flattened
1200
1400
1600
Wavelength (nm)

Bending Loss

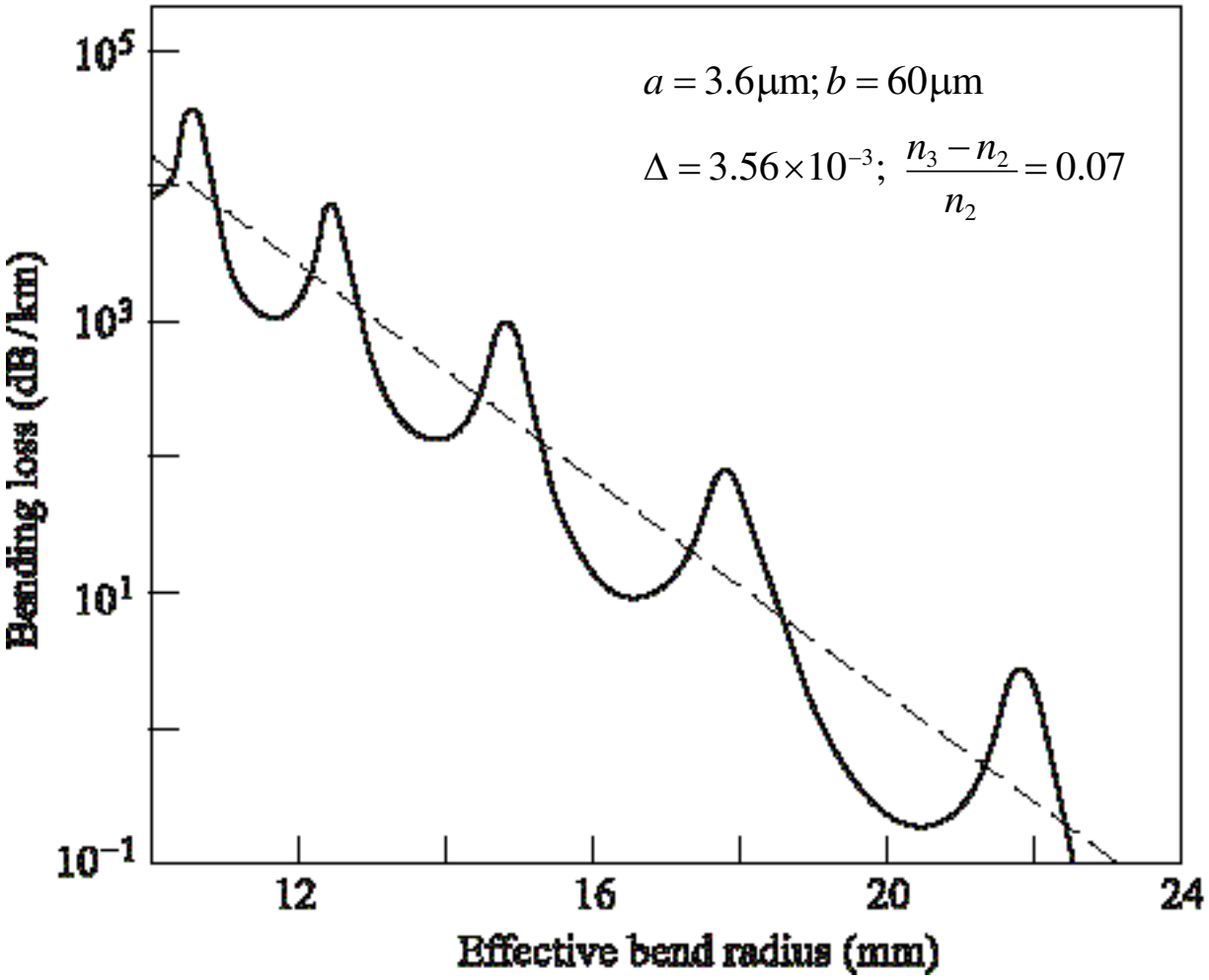


Bending effects on loss vs MFD



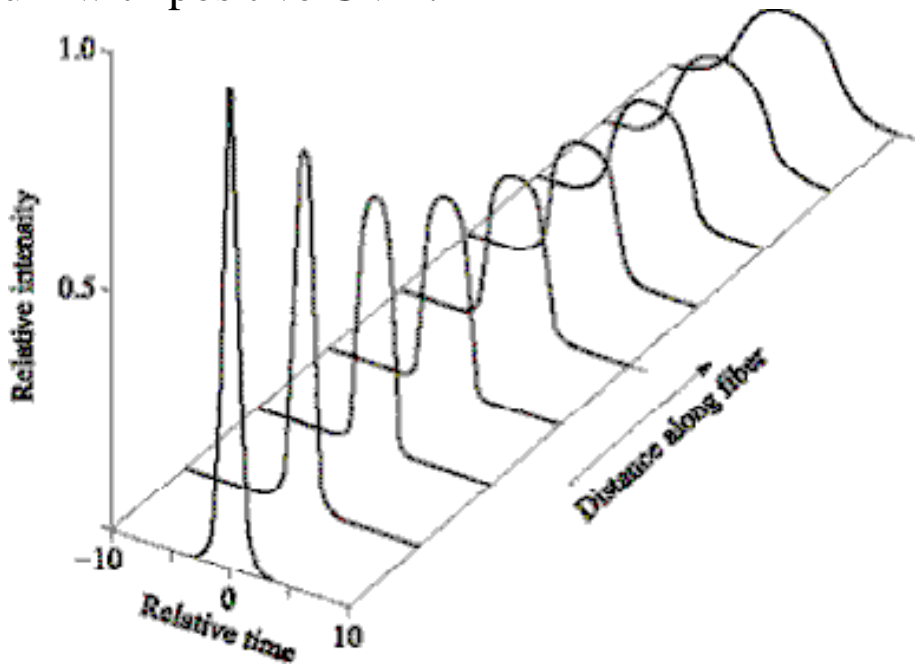


Bend loss versus bend radius



Kerr effect

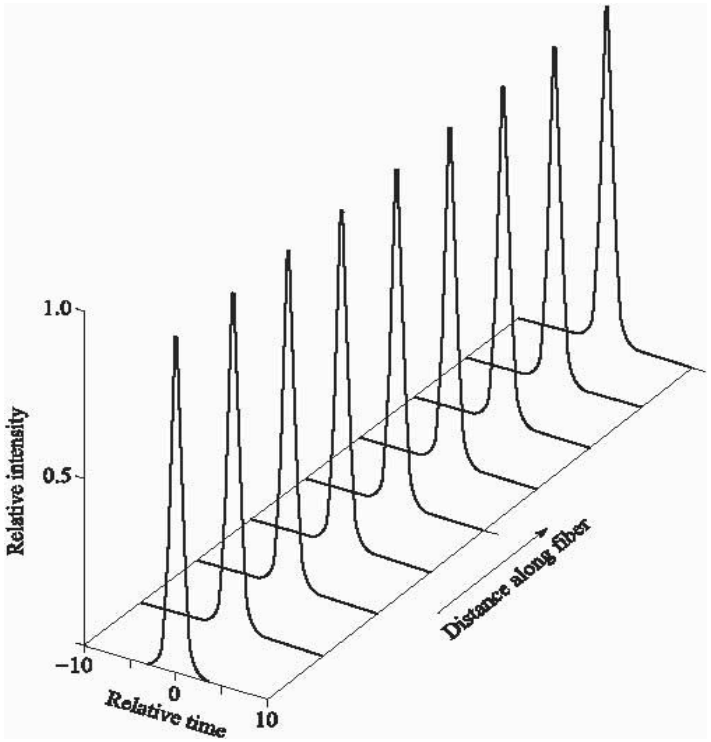
Temporal changes in a narrow optical pulse that is subjected to Kerr nonlinearity in A dispersive medium with positive GVD.



$$n = n_0 + n_2 I$$

Kerr nonlinearity in fiber, where I is the intensity of Optical wave.

First-order Soliton



Temporal changes in a medium with Kerr nonlinearity and negative GVD. Since dispersion tends to broaden the pulse, Kerr Nonlinearity tends to squeeze the pulse, resulting in a formation of **optical soliton.**