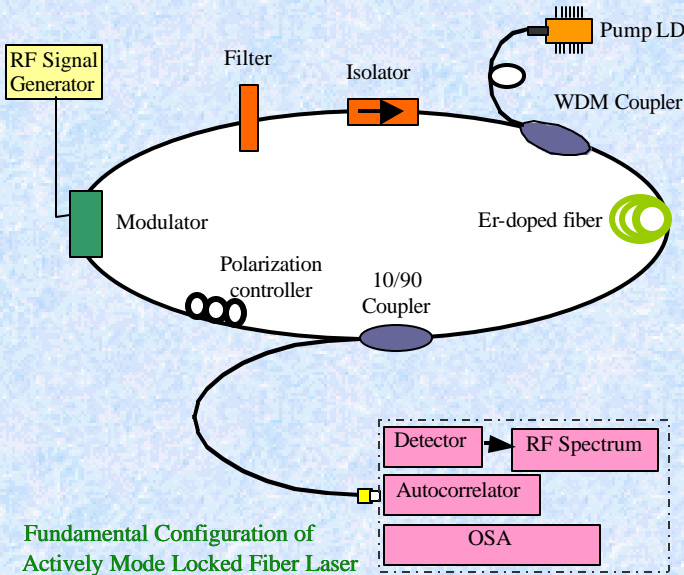




Mode Locked Soliton Fiber Ring Laser

To meet the requirement of rapid expanding for high-speed communication systems, an ultrahigh-speed soliton light source is indispensable for not only the development of ultra-high speed OTDM but also the future ultra-high speed DWDM communications. Mode-locked fiber lasers have shown to be the most attractively inexpensive and all optical light sources to generate ultrashort pulses.

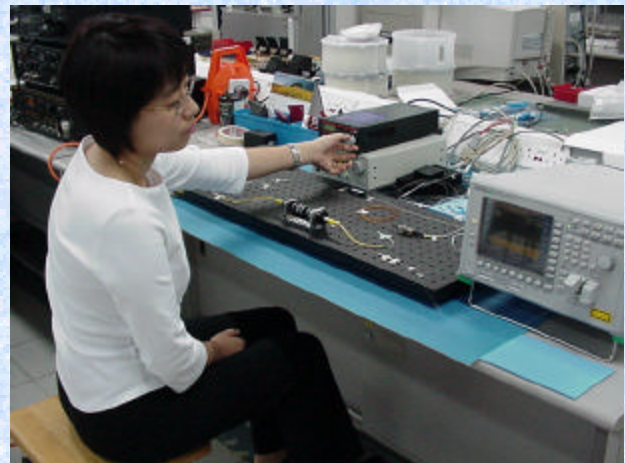


Actively harmonic mode-locked erbium-doped fiber lasers are capable of producing transform-limited narrow Gaussian pulses with adjustable multi-GHz bit rates and variable pulsewidths in the picosecond range. They are especially suitable for high speed, long distance WDM transmission.

Soliton are very narrow, high-intensity optical pulse that retain their shape through the interaction of balance of fiber dispersion and the nonlinear properties of an optical fiber. Hybrid-type passively and actively mode-locked fiber ring laser which possessed the advantages of both active and passive mode-locked scheme can produce femtosecond range soliton pulses at high repetition rate.

Output of Soliton fiber lasers is inherently unstable because of the fluctuations of polarization state and cavity length caused by mechanical vibration and temperature variation. In order to stabilize the soliton source, piezoelectric transducer is needed to actively control the cavity length.

Multi-wavelength soliton fiber laser is our focused area. Cross saturation in a homogeneously broadened gain media normally prevents lasing at more than a single wavelength, fiber bragg grating and etalon and Liquid nitrogen based technology will be adopted to solve the problems.



Experiments of Passively Mode Locked Soliton Fiber Laser

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