



ERBIUM DOPED FIBER  
EDUCATION SYSTEMS



## Amplifier and fiber training kit

### Amplification

Erbium Doped Fiber Amplifiers (EDFA) have revolutionized Telecommunications. They allow an amplification of 30 dB of optical signal without any bandwidth limitation, on a 40 nm band, centered at 1550 nm. Consequently, fiber optics Telecommunications systems can be upgraded only by changing the emitter and receiver systems. Their wide amplification band also enables the development of WDM transmission, with a capacity of up to 1 Tbits/s. Amplifiers are now the key elements of optical Telecommunications.

Kit has developed a laboratory kit allowing a complete study of Erbium Doped Fiber Amplifiers (EDFA). Starting with the basic physical phenomena, this kit is suitable for the complete influence of many parameters such as the pump power, the input signal level on EDFA performances (ASE noise, saturation power, gain, etc.). The kit is complete, with different components including an optical isolator, a 1550 nm DFB laser, three attenuators, a fiber Bragg grating... The documentation explains in detail the fabrication and performance of all these components. It also contains various lecture notes and practical exercises.



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## ***Applications***

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- *Erbium doped fiber amplifier*
- *Erbium doped fiber laser*
- *Superfluorescent source (ASE source)*
- *Linear cavity fiber laser*
- *Ring cavity fiber laser*
- *The constant fluorescent level start-up*
- *The relaxation oscillations*
- *Fluorescence decay*
- *Saturation effects*
  - *Gain or loss dependence of the working wavelength...*

## ***Features***

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- *Comprehensive teaching & training manual*
- *Rack mounted components*
- *Eye safe connectors*
- *Competitive pricing*
- *Modular presentation of the kit*
- *Pump modulation*
- *Laser behavior observation (various spectra)*

<b>COMPONENTS INCLUDED</b>
1 Pump laser @ 980 nm, 80 mW
1 Erbium doped fiber (saturation power : 10 dBm, gain : >30 dB)
1 DFB laser diode @ 1550 nm, 1 mW
1 Fiber optic coupler 90/10
2 980/1550 nm multiplexers
3 Optical attenuators (5, 10 and 20 dB)
1 Gold mirrored fiber end
1 Optical isolator
1 Fiber Bragg grating
1 Detector : InGaAs photodiode
9 Patchcords E2000/APC Diamond connectors
<b>ENCLOSED DOCUMENTATION</b>
<i>The documentation of the kit is really complete. It contains, a detailed description of the components, and many experimental examples. Experimental part :</i>
<i>Introduction</i>
<i>Description of components</i>
<i>Laser safety</i>
<i>Experiments: gain, saturation power, noise characteristics, ASE noise, superfluorescent source, linear and ring lasers.</i>
<b>THEORETICAL LECTURE NOTES</b>
<i>Introduction</i>
<i>Theory of atoms</i>
<i>Optical amplification</i>
<i>Pumping mechanisms</i>
<i>Amplifier noise</i>
<i>Erbium doped fiber amplifiers</i>
<i>Erbium doped fiber lasers</i>