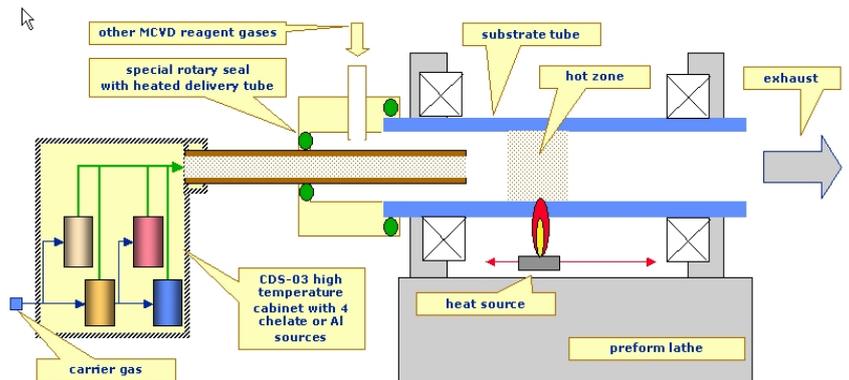


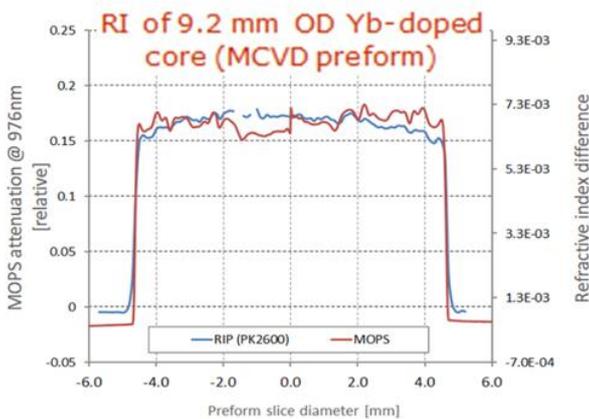
### Applications

CDS-03 Chelate delivery system is an accessory for fabrication of optical fiber preforms by CVD or OVD process, where special dopants and precursors are delivered into deposition zone by direct evaporation of low vapor pressure precursors like rare earth ions and aluminum. It is an essential tool in fabrication of highly rare-earth doped fibers, which are used as fiber amplifiers and fiber lasers, like EDFA and Yb-, Tm- or Ho-doped dual- or triple-clad large mode area (LMA) fibers.



### Description

By using high temperature direct evaporation of precursor, providing rare earth and metal ions, standard preform fabrication processes can be used to produce glass layers highly doped with rare earth ions or aluminum without the need for solution doping (soaking) process. Chelate doping technique permits fabrication of special preforms with large core diameter (over 10 mm) and high rare earth or metal ion concentration. Co-doping by cerium (Ce) and phosphorous is straightforward operation in deposition regime close to standard preform fabrication allows for reduced complexity, increased yield and improved attenuation characteristics of the finished fibers. Additional hardware is provided to guide vapors to process (special injection tube and heated conduits) and inject vapors directly into glass-forming reaction inside substrate tube (for CVD) or torch (OVD or VAD). Process parameters are controlled by a dedicated control system (like Optacore's WinOPTA control system and software).



### Precursors

A wide range of organometallic (chelates & other  $\beta$ -diketonates) chemicals is used as precursors, permitting doping by many rare earth ions (tested Yb, Er, Tm, Ho, Sm, Nd, Ce), transition-, alkali- or alkali earth- and heavy metal-ions (tested Al, Mg, Co, V, Bi, Fe, Cr), while Ge, P, B and F are introduced in usual doping fashion. SiCl<sub>4</sub> is standard silicon precursor, TEOS and D4 can be used in OVD.

### Process Support

Optacore provides basic process support and information on precursor selection as part of system delivery, detailed and application specific (or product specific) process support and training is provided upon request. Optacore also supplies high-purity precursor materials.

### Accessories & Custom Design

CDS-03 can be retro-fitted to a number of preform lathes or deposition systems, and can be custom developed for non-standard applications. Ask for details.

