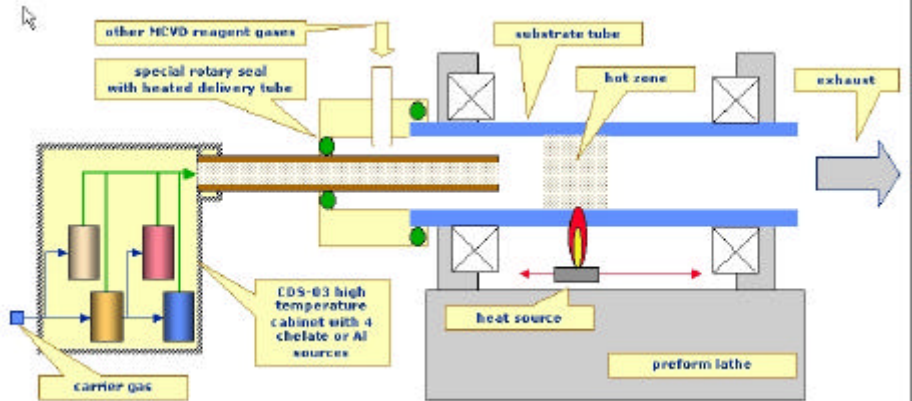


CDS-03

Advanced Chelate Delivery System

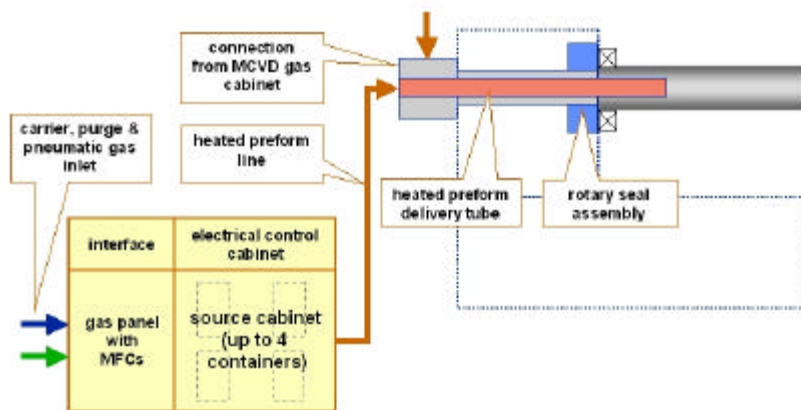
APPLICATIONS:

Chelate delivery system CDS-03 is an accessory for fabrication of optical fiber preforms by MCVD 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 therefore an essential tool in fabrication of highly rare-earth doped fibers, which are used as fiber amplifiers and fiber lasers, like EDFA and dual-clad fibers.



DESCRIPTION:

By using high temperature direct evaporation, standard MCVD preform fabrication process can be used to produce glass layers highly doped with rare earth ions or aluminum without the need for solution doping (soaking) process. Therefore, this technology permits fabrication of specialty preforms with reduced complexity, increased yield and improved attenuation characteristics of the finished fibers.



CDS-03 unit is an add-on device for standard MCVD preform making system, which permits use of MCVD preform lathe in a standard way, when not using chelate doping process, and can be (on customer's request) integrated with MCVD control system and process computer. Attached drawings show principle of operation.

PRECURSORS & SOLVENTS:

The system is intended for use with the following reagents:

- ?? rare earth chelates (La (thd)₃ 2,2,6,6-tetramethyl-3,5-heptane dionates), suitable compounds exist for erbium (Er), neodymium (Nd) and ytterbium (Yb) ions
- ?? aluminum trichloride (AlCl₃ x 6H₂O) or metallic aluminum (Al)
- ?? any other solid precursor with boiling or sublimation point within used temperature range (room temperature to 240 °C)

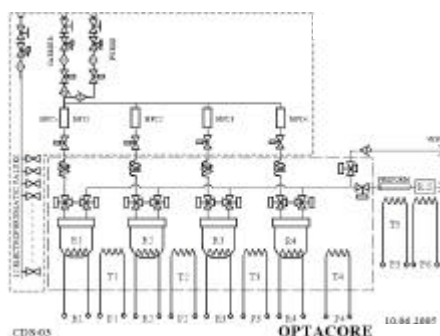
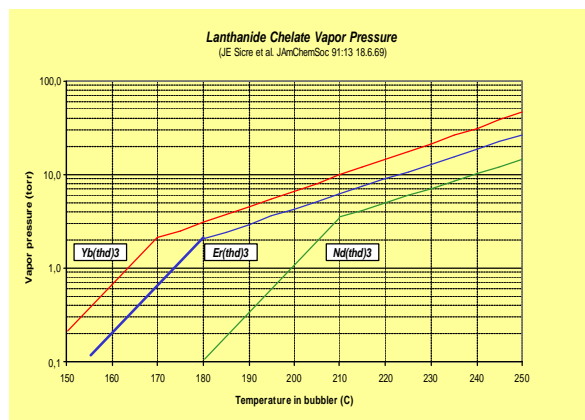
MCVD system can be used time for deposition of standard preforms at any time, without major changes to hardware configuration, simply by changing parts of rotary seal assembly!

CONFIGURATION:

CDS-03 system consists of the following subsystems:

- ?? reagent supply cabinet, heated to max. 250°C
- ?? up to 4 reagent vessels for different precursors
- ?? special rotary seal with sliding tube mechanism
- ?? heated delivery tube (all the way into hot zone)

The advantage of CDS-03 system design is a careful choice of gas piping elements, permitting trouble-free operation. Design is adapted to continuous production conditions. Design with sliding heated delivery tube offers the advantage of bringing RE precursor and Al ions into hot zone separately from chloride vapors, improving process control, deposition stability and homogeneity.



OPTIONS:

CDS-03 is offered with full installation and process start-up support. Customers receive training in set-up and preform fabrication procedures as part of commissioning work. When required, process support or know-how for specific products can be offered.

CUSTOM DESIGN:

CDS-03 system can be installed to a wide spectrum of preform lathes (Photonium, Heathway, SGC, Nextrom, Arnold, Litton, Lefevre) by modifications to rotary seal and parts for the sliding mechanism. It can be combined with Aerosol Doping system, using the same seal assembly.

SPECIFICATIONS:

Dimensional data:

Cabinet 4 ch. (D x W x H in mm)	400 x 1000 x 800
Number of reagent vessels	2 or 4
Weight	80 kg (4 ch. version)
Sliding support (L x W x H in mm)	1750 x 200 x 200

Electrical data:

Power connection	230 V 50 Hz, fuse 16 A
Power consumption approx.	max. 3 kW, 4 ch. version

Electrical data – US version:

Power connection	110 V, fuse 20 A
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Process data:

Heat-up time to 200°C approx.	45 min
Cool-down time approx.	90 min
Valve type (high temperature)	Large cross section 3-way, pneum. actuated

Process data (cont'd):

Valve type (low temperature)	Bellows, pneum. actuated
Gas connections	compression type
Size of reagent charge	5 – 10 gram
Minimum reagent charge	2 gram
Inert gas for carrier (He)	Purity 99.995%
OH-	below 1 ppmw
THC	below 1 ppmw
Inlet pressure	2 – 5 bar
Consumption	10 slm max
Number of mass flow controllers	4 or 2
Type and flow through MFC	He 0.01 to 2 slm recom'd
Container and tube temperature	50 to 240°C K or J type sensor, PID
Precision in container:	+/- 3 °C at 200 °C
Precision in piping:	+/- 5 °C at 200 °C

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Note: Optacore reserves the right to change construction and/or specification of this product without notice.