

Introduction

MDS preform fabrication system is based on versatile and flexible MCVD preform technology. It is suitable for fabrication of wide range of optical fiber preforms and can be combined with a number of add-on devices for special doping (rare earth vapor phase precursor delivery) or advanced processing (FCVD) using a furnace instead of oxyhydrogen burner as heat source. MDS is adapted to specific customer requirements and is available in different equipment configurations depending on application.

Applications

MCVD process is the key technology for fabrication of preforms for rare earth-doped laser optical fibers, by solution doping or by vapor-phase methods. MDS preform system is designed to give maximum performance for all doping processes and precursors (Al, P, Yb, Er, Tm, Ho, Ce and others) and offers solutions for less common dopants (heavy metal ions, organometallic and organic precursors).

MDS is also used in fabrication of preforms for:

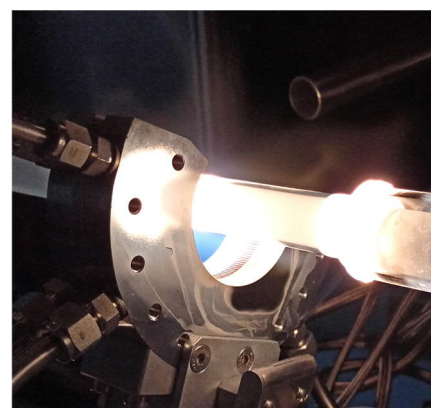
- Single mode fibers (standard SMF 28 fiber, modifications for cut-off and mode field size,



dispersion shifter or flattened step or graded index SM fibers, ...)

- Bend insensitive or HOM optimized SM fibers,
- PM fiber preforms: Panda, Bow-Tie or Elliptical core/ clad design,
- Boron-doped stress rods for PM Panda fiber fabrication,
- Graded and step index multimode fibers, of different designs,
- Highly Ge-doped (Raman fibers) and photo-sensitive fibers,
- Nanoparticle-and metal-doped preforms for attenuators or sensor fibers.

MDS preform glass working lathe is used for: preparation of substrate tubes, fire polishing of preforms before fiber drawing, preform jacketing, stretching and reforming, collapsing and consolidating PM fiber preforms and consolidation of microstructured preforms.

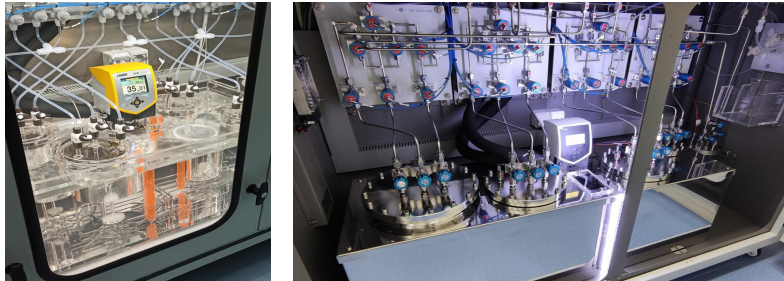


Lathes are available in different configurations and lengths, to suit customer's specific requirements, including options for tube diameter control with stretching functions, reliable automatic soot removal, tube inner pressure, hot zone shape control and fast collapse with a furnace (see also HGL glass working and VGL vertical jacketing lathe catalogs [LINK](#)).

Dopants and precursors

MDS is typically equipped with 3 or bubblers, for SiCl_4 , GeCl_4 and POCl_3 , and with a 4th bubbler, if BBr_3 or TiCl_4 is used. Bubblers and all related piping components are available in metal (SS 316EL or Ni-alloy) or polymer (PTFE, PFA, PVDF) versions, to cover widest range of customer specifications.

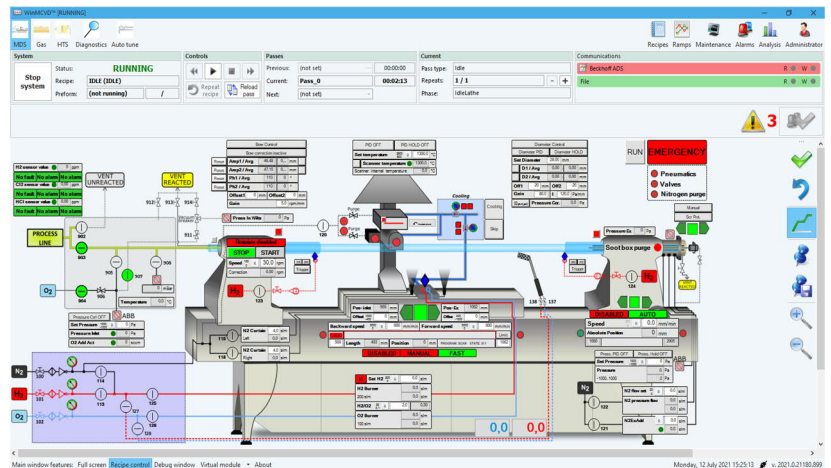
Glass bubbler version (left) and metal bubbler (right) version in MDS gas cabinet



Gaseous precursors include SF_6 , SiF_4 and BCl_3 . Helium and chlorine gases are also provided. For fabrication of active or special fibers, Bimes' vapor phase doping device HTS is recommended, to generate vapors of rare earth- and metal-ion precursors (Yb, Er, Al and others).

Control system

Control system and software is the key component of a modern MCVD system. Bimes supplies MDS systems equipped with the advanced OptiFACT, a purpose developed, Windows-compatible, GUI control software, offering advanced ramping functions, extensive data logging, process data analyzer, recipe database, remote update and servicing over internet (see catalog for more details).



Accessories and options

Burners: standard is metal half-ring burner, burners with steel or quartz multi-jet as option.

MCVD Furnace: Optacore's MIF-35 inductive furnace is offered for fast collapse process.

Pyrometers: Raytek M150 IR scanner (MDS standard pyrometer), single point models from variety of other suppliers as option.

Other options:

- HTS high temperature doping system with metal- and rare earth-ion precursors
- IVD in-situ solution doping system
- CVS camera vision system for tube/preform diameter measurement/control, with preform bow control option
- SBS soot removal system with inner substrate tube pressure control

Ancillary equipment:

- GTS exhaust gas scrubber
- GPS central gas purifier for MCVD gases
- BRS automatic bubbler refill system
- SGS gas cylinder cabinets for standard (He , SF_6 , N_2) and dangerous gases (Cl_2 , BCl_3 , SiF_4 ...)
- lathe hood enclosures, clean air system, hot air exhaust, cooling water system, ,

Other services:

- consulting services for MCVD production premises and laboratory design
- MCVD process training for standard and special doping methods and preforms
- Process knowledge (know-how) transfer
- Equipment start-up services

For more information and quotes please write to sales@bimespro.com or info@bimespro.com