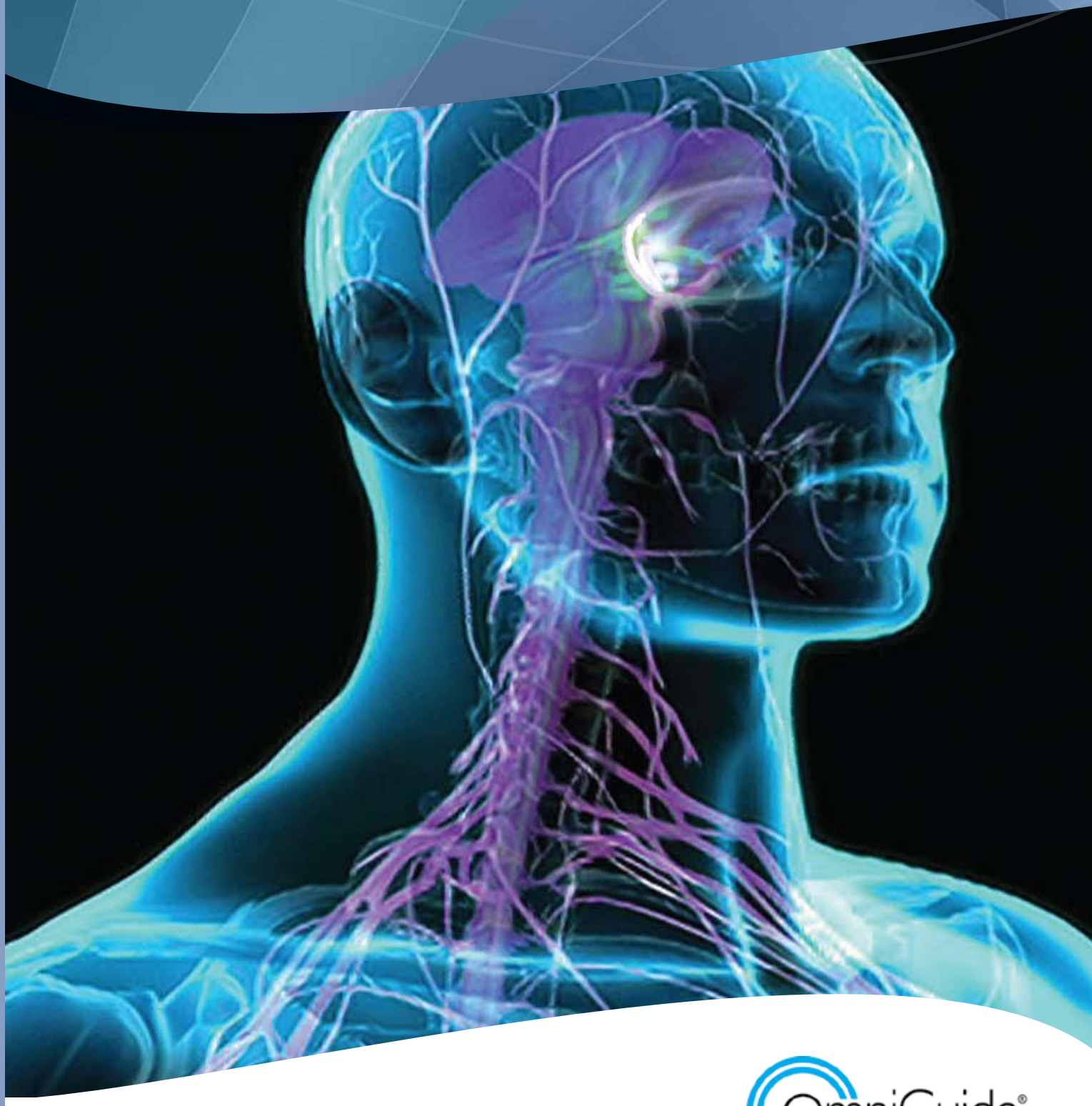
OmniGuide's BeamPath® System for NEUROSURGERY



OmniGuide®

Delivering the world's most precise optical scalpe

HISTORICAL PERSPECTIVE

CO_2 LASERS IN NEUROSURGERY: A HISTORICAL PERSPECTIVE

First used for the treatment of brain tumors in 1969,[1] neurosurgeons have long recognized the value of CO_2 laser as a no-touch tool that combines pinpoint accuracy and precise dissection with microvascular coagulation. However, the absence of a fiber delivery system hindered the use of this optimal energy source.

Recent breakthroughs in materials science[2,3,4,5] have led to the development of the world's first-ever flexible fiber for CO_2 laser energy delivery. OmniGuide® designs and manufactures optimized optical scalpels for neurosurgery, keeping the needs of surgeons in mind. The innovative BeamPath NEURO product line utilizes photonic bandgap technology to deliver highly precise CO_2 laser energy to target tissue. OmniGuide's BeamPath NEURO offers a paradigm shift in precision microsurgery.

PHOTONIC BANDGAP TECHNOLOGY FOR NEUROSURGERY

The BeamPath NEURO flexible fiber replaces the cumbersome microscope-mounted line-of-sight CO_2 laser and places control back in the hands of neurosurgeons. Wielding the fiber in his hand as a pencil offers the surgeon improved flexibility when using this no-touch technique on various central nervous system pathologies, all the while retaining a clear field of vision.

1 Stellar S. Experimental studies with the carbon dioxide laser as a neurosurgical instrument. *Med Biol Eng* 1970; 8:549-559.

2 Fink Y, Winn JN, Fan S, Chen C, Michel J, Joannopoulos JD, Thomas EL. A dielectric omnidirectional reflector. *Science*. 1998; 282:1679 – 1682.

3 Ibanescu M, Fink Y, Fan S, Thomas EL, Joannopoulos JD. An all-dielectric coaxial waveguide. *Science*. 2000:289; 415–419.

4 Hart SD, Maskaly GR, Temelkuran B, Prideaux BH, Joannopoulos JD, Fink Y. External reflection from omnidirectional dielectric mirror fibers. *Science*. 2002; 296:510 – 513.

5 Temelkuran B, Hart SD, Benoit G, Joannopoulos JD, Fink Y. Wavelength scalable optical fibers for CO_2 laser transmission. *Nature*. 2002; 420:650-653.

THE BEAMPATH NEURO SOLUTION FOR NEUROSURGERY

The BeamPath NEURO CO_2 laser fiber is a versatile tool that adds an effective, intuitive, and time saving modality to the neruosurgeon's armamentarium. It offers precision microsurgical capabilities near critical structures in confined areas, such as the spinal cord, skull base, and brainstem.

Initial peer reviewed studies, editorials and reviews have demonstrated the safety and efficacy of the technology and attest to its significant contribution to the fields of adult and pediatric neurosurgery.[6,7,8,9]

6 Ryan RW, Wolf T, Spetzler RF, Coons SW, Fink Y, Preul MC. Application of a flexible CO_2 laser fiber for neurosurgery: laser-tissue interactions. *J Neurosurg*. 2009; August 7 (Epub ahead of print).

7 Browd SR, Zauberman J, Karandikar M, Ojemann JG, Avellino AM, Ellenbogen RG. A new fiber-mediated carbon dioxide laser facilitates pediatric spinal cord detethering. Technical note. *J Neurosurg Pediatr*. 2009; 4:280-284.

8 Ellenbogen RG. From Bench to the operating room: a tale of the omnidirectional mirror fiber. *Neurosurgery*. 2009; 65: N10.

9 Ryan RW, Spetzler RF, Preul MC. Aura of technology and the cutting edge: a history of lasers in neurosurgery. *Neurosurg Focus*. 2009; 27:E6.

CLINICAL VALUE

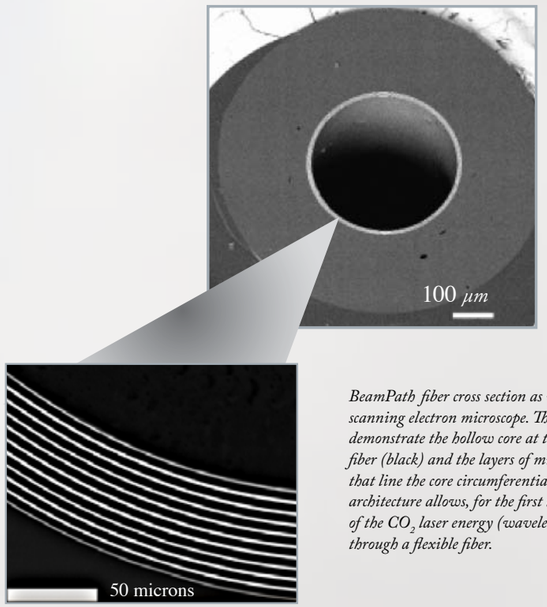
The OmniGuide BeamPath NEURO fiber is a precision optical scalpel that delivers CO_2 laser energy and advances the treatment of central nervous system tumors.

>> **Surgeon-controlled no-touch tool** reduces tissue retraction and manipulation leading to limited post-operative edema and possibly quicker recovery.

>> **Precise dissection** enables pin-point accuracy while working in close proximity to critical neurovascular structures.

>> **Cutting** allows for efficient and precise tumor debulking.

>> **Microvascular coagulation** enables the surgeon to operate on appropriate tumors within a clean field.



BeamPath fiber cross section as viewed under a scanning electron microscope. These micrographs demonstrate the hollow core at the center of the fiber (black) and the layers of mirrors (white) that line the core circumferentially. This novel architecture allows, for the first time, propagation of the CO_2 laser energy (wavelength of 10.6 µm) through a flexible fiber.

Intracranial Tumor Surgery

No-touch precision microsurgery at your fingertips. Minimal manipulation of tissue combined with the pin-point accuracy of a scalpel for operating in deep holes and near critical structures.

Spine Tumor Surgery

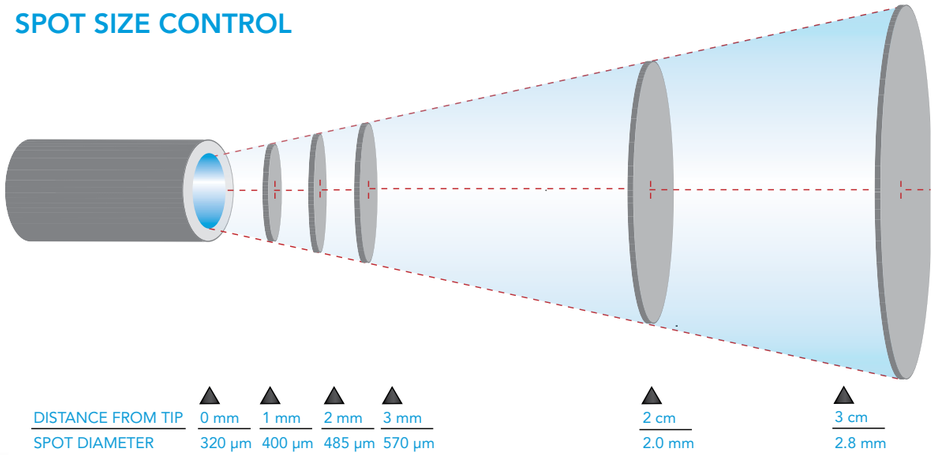
Safety. Precision. Ease of maneuverability in and around spinal cord structures promoting a true nerve sparing effect.

Transnasal Surgery

Flexibility. Superior visualization.The versatility of one small-profile tool for precise dissection, cutting, and ablation combined with microvascular coagulation.

THE BEAMPATH ADVANTAGE

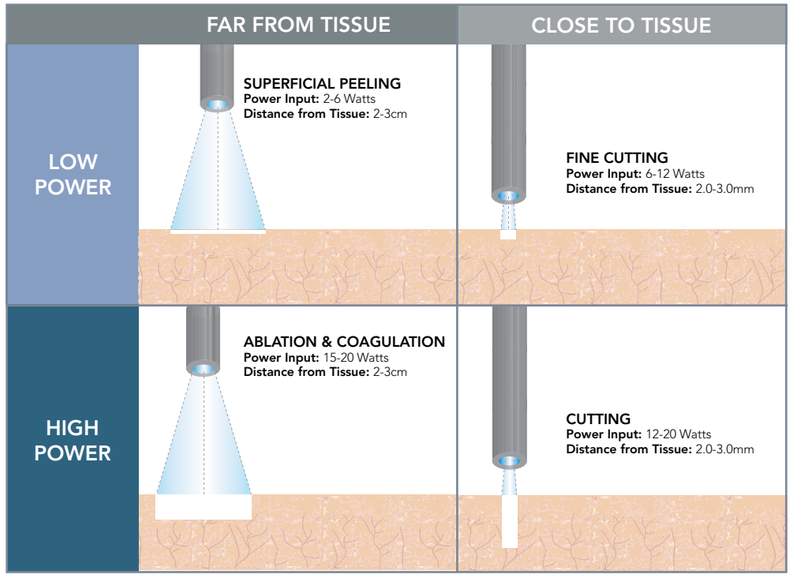
SPOT SIZE CONTROL



Control over laser-tissue interaction is maintained by altering power settings, distance from tissue, and exposure duration. In near-contact mode, high power density leads to rapid and precise cutting, while fiber retraction allows for wider dispersion of laser energy, thus achieving controlled layer-by-layer ablation and microvascular coagulation.

Representative illustration only, not drawn to scale.

THE 4 MODES OF OPERATION

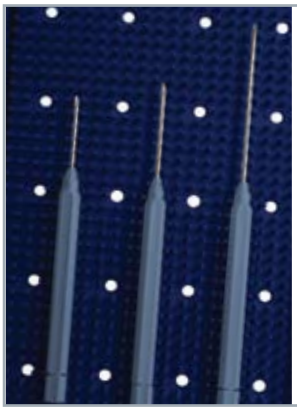


The BeamPath NEURO can be used in four modes to achieve four different tissue interactions. The BeamPath NEURO's four modes offer unparalleled versatility: Cutting (close to tissue at high power), Fine Cutting (close to tissue at low power), Ablation & Coagulation (far from tissue at high power) and Superficial Peeling (far from tissue at low power).

Representative illustration only, not drawn to scale.

TO RECEIVE A COMPLIMENTARY DVD FEATURING DETAILED SURGICAL TECHNIQUES PLEASE EMAIL SALES@OMNI-GUIDE.COM OR CALL 888-666-4484 OR 617-551-8444.

ORDERING INFORMATION

	Catalog #	Product Name	Description
	NEURO-L	BeamPath NEURO-L Fiber	Length = 150 cm. Set of 10 fibers.
	NEURO-HS	BeamPath NEURO Handpiece Set	Includes 3 NEURO handpieces; NEURO-HP-3.5, 5, 8 and one autoclave tray.
	NEURO-HP-3.5	BeamPath NEURO Handpiece	3.5 cm working length with dissecting tip. Compatible with NEURO-L fiber.
	NEURO-HP-5	BeamPath NEURO Handpiece	5 cm working length with dissecting tip. Compatible with NEURO-L fiber.
	NEURO-HP-8	BeamPath NEURO Handpiece	8 cm working length with dissecting tip. Compatible with NEURO-L fiber.
	FELS-30S	Fiber Enabled Laser System	Portable CO_2 laser with optical adapter. BeamPath NEURO-L compatible. Maximum power 30 W.
	FELS-25A	Fiber Enabled Laser System	Portable CO_2 laser with optical adapter. BeamPath NEURO-L compatible. Maximum power 25 W.
	ACC-GFU-100	Gas Filter Unit	100 PSI sterilizable gas filter units. Pack of 10.
	ACC-GH-2	Helium Gas Hose	8-foot helium gas hose.
	ACC-SH-510	Helium Gas Cylinder	Helium gas tank (510 liter).
	ACC-SH-290	Helium Gas Cylinder	Helium gas tank (290 liter).
	ACC-GR-SH1	Gas Tank Regulator	Gas tank regulator: 0-200 PSI output pressure. For use with the SH-510 and SH-290 helium gas cylinders.
	ACC-GRP	Handpiece Grippers	Replacement silicone grippers for handpieces. Pack of 10.
	ACC-LD1	Laser Drape, Full Length	Sterile drapes for laser system. Pack of 10.
	ACC-SP	Sterile Instrument Pouch	Pouches for sterile intraoperative placement of fiber-in-handpiece. Pack of 10.
	ACC-SG-1	Safety Glasses	Laser safety glasses.

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Delivering the world's most precise optical scalpel

For more information or to order call 888-666-4484/617-551-8444 or visit www.omni-guide.com

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To request more copies reference: DOC-NEURO-1