Fiber Optics

A Guide to Resources

Rakow Research Library

The Corning Museum of Glass

# Books

Beadle, J. D. Glass: an engineering material; edited by J. D. Beadle. West Wickham, Morgan Grampian (Kent), 1969. 75 p. (Design engineering series)

Location: Secured Stacks

Call Number: TP857 .B36

Location: Microforms

Call Number: F-10070

Conference on the Physics of Fiber Optics (1978: University of Rhode Island). Fiber optics, advances in research and development. Edited by Bernard Bendow and Shashanka S. Mitra. New York: Plenum Press, c1979. x, 693 p.

Note: "Proceedings of the Conference on Physics of Fiber Optics, and selected lectures from the short course on recent advances in fiber optics, sponsored by the University of Rhode Island, and held June 19-23, 1978." Includes bibliographical references and indexes.

<Call Number: TA1800 .C74>

Corning Glass Works. Telecommunications Products Division. GuideLines. Corning, NY: Telecommunications Products Division, Corning Glass Works, 1984- Quarterly. <TA1800.G94>.

[Corning Glass Works]. [Packet of Information about Fiber Optics] [Includes: Duke, D. "A History of Optical Communications"; "The Next 30 Years of Fiberoptics"; Keck, "Fundamentals of Optical Communications v.23,#5 5/85; Gunderson, "Optical fibers... document Oct.13,1986; & CGW's Guidelines, v.1,/1,1984-v.4,no.1,1988

<placed in VF under: glass fibers>

Corning, Incorporated. Just the facts: A Basic Optical Fiber Overview*.* Corning, NY: Corning Incorporated, 1989. <TA1800.C81j>

Corning Incorporated. Lightspeed communications: Corning fiber and photonics. Corning, NY: Corning Incorporated, [1999] 1 folded brochure ([6] panels).

"PB.3326"--P. [4] of cover.

Call Number: TP853.N6 .C81â„“

Location: Microforms

Call Number: F-19230

Corning Museum of Glass. Innovations in glass. Corning, NY: The Corning Museum of Glass, 1999. Pages 40-43. <TP857.3.C81j>

Daly, James C. Fiber Optics*.* Boca Raton, FL: CRC Press, 1984. <TA1800.D15>

Dyer, Davis. Corning: a story of discovery and reinvention. Corning, NY: Corning, Inc., 2001. Pages 100-118. <TP853.N6.D99>

Ellis, William S. Glass: From the First Mirror to Fiber Optics, The Story of the Substance That Changed the World.New York: Avon Books, 1998. <NK5106.E47>

Graham, Margaret B.W., and Alec T. Shuldiner. Corning and the craft of innovation. Oxford, England and New York: Oxford University Press, 2001. Consult index.

<TP853.N6.G74>

Hecht, Jeff. City of Light: The Story of Fiber Optics*.* New York: Oxford University Press, 1999. <TA1800.H44c>

Hecht, Jeff. Optics: Light for a New Age. New York: Scribner, 1987. pp. 108-119, 115-156

Describes the wonders of light and optics, exploring such developments as lasers, fiber optics and holography. <TA1800.H44o>

Hecht, Jeff.Understanding Fiber Optics*.* Upper Saddle River, NJ: Prentice Hall, 1999. <TA1800.H44u>

Hecht, Jeff. Understanding fiber optics. 4th ed. Upper Saddle River, N.J.: Prentice Hall, 2002. ix, 773 p.

Includes bibliographical references (p. [745]-747) and index. Discusses types, properties, and applications of fiber optics.

<TA1800 .H44u 2002>

Hecht, Jeff. Understanding fiber optics. 5th ed. Upper Saddle River, N.J.: Pearson/Prentice Hall, 2006. ix, 790 p.

Includes bibliographical references (p. 757-759) and index.

Location: Stacks

Call Number: TA1800 .H44u 2006

Hecht, Jeff. Understanding lasers: an entry-level guide. 3rd ed. Piscataway, NJ: IEEE Press ; Hoboken, N.J.: John Wiley & Sons, c2008. xiii, 478 p.

Note: Includes bibliographical references (p. 451-453) and index. Glass: p. 137-138; as a laser host: p. 228, 239-240. IEEE Press understanding science & technology series

<Stacks TA1675 .H44 2008>

Kassinger, Ruth. Glass: from Cinderella's slippers to fiber optics. Brookfield, Conn.: Twenty-First Century Books, c2003. 80 p.

Includes bibliographical references (p. 76) and index. Describes the physical composition and characteristics of glass, and presents glassmaking techniques and the various uses made of glass throughout history. Includes a timeline and glossary. CMG images: p. 6, 22, 38, 40, 47. (Material world)

<TP857.3 .K19>

Nagel, Suzanne R. Optical Fiber Materials and Properties: Symposium held December 3-5, 1986, Boston, Massachusetts.Pittsburgh, PA: Materials Research Society, 1987. <TA1800.N14>

Rawson, Harold. Properties and Applications of Glass*.* Amsterdam, NY: Elsevier Scientific Publishing Col, 1980. <TP857.R26> [Fiber optics: pp. 184-7]

Rawson, Harold. Properties and applications of glass. Marietta, OH: CBLS, 2002. xxi, 318 p.

Includes bibliographical references (p. 292-306) and indexes. Reprint of the 1980 Elsevier ed. (CMGL owns). Fiber optics: p. 184-7.

<TP857 .R26 2002>

Yamane, Mayayuki and Toshiyuki Asahara. Glasses for Photonics. Cambridge, England: Cambridge University Press, 2000.

Yearbook of Science and the Future 1987. Chicago: Encyclopedia Britannica, 1986. 542 p

Discusses holograms, fiber optics, fluoride glass, insulation, etc. Includes CMoG object: 66.1.213, p. 229.

<Record Number: 2077>

# Periodicals and Articles

GuideLines. Corning, N.Y.: Telecommunications Products Division, Corning Glass Works, 1984- . Quarterly. [Vol. 1, no. 1] (1984)- .

Published as a service to Corning's customers and end-users, covering Corguide optical waveguide products, fiber-optic industry trends, application engineering, Corning business activities, recent installations and case histories, efforts with other manufacturers of fiber-optic components, and new literature available in this field.

Volumes Owned: v.1-v.4 no.1 ([GL-1] - GL-13) 1984-1988 Lacking v.2 no.4 (GL-8) 1986

Call Number: TA1800 .G94

Barreneche, Raul A. “Shedding Light on Fiber Optics.” Architectur*e*, v. 86, no. 4, April 1997, pp. 162-167.

Boraiko, Allen A. “Fiber Optics: Harnessing Light by a Thread.” National Geographic, v. 156, no. 4, Oct. 1979, pp. 516-535, ill.

Edward, John. “From Invention to Innovation.” Kañch, v. 4, no. 2, June/Aug. 1996, pp. 24-25, ill.

Additional info: All India Glass Manufacturers' Federation. Fiber optics.

Hecht, Jeff. “A Fiber-Optic Chronology.” [S.l., s.n., 2002], [9] pp.

Printed from the Internet.

<VF: Glass types -- Specialty Glasses -- Fiber optics>

Hecht, Jeff. “Illuminating the Origin of Light Guiding.” Optics & Photonics News, Oct. 1999, pp. 27-30, ill.

Daniel Colladon and early fiber-optic research.

<VF: Glass Types -- Specialty Glass -- Fiber optics>

Hecht, Jeff. “A Short History of Fiber Optics.” [S.l., s.n., 2002], [5] pp.

Printed from the Internet.

<VF: Glass types -- Specialty Glasses -- Fiber optics>

Houghton, David. “Fiber-Optic Technology—From Specialty to Functional.” Architectural Lighting, v. 12, no. 5, Oct./Nov. 1998, pp. 56-58.

Ketron, Lisa A. “Fiber Optics: The Ultimate Communications Media.” Ceramic Bulletin, v. 66, no. 11, 1987, pp. 1571-1578.

Lewis, Matthew. “Currents of Light.” Metropolis, v. 9, no. 10, June 1990, pp. 62-65+ [The fiber optic revolution]

Perham, Mary. “'Glass and the Speed of Light': Exhibit Explores Art of Technology.” The Leader, Dec. 8, 2000, pp. A1-A2, ill.

Corning, NY. Fiber optics.

<VF: Glass galleries, museums, exhibitions -- U.S. – New York -- Corning -- Corning Museum of Glass -- 1996-2001>

Port, Otis. “'Rainbow' Technology Revolutionizes Data Speed.” Glass Machinery Plants & Accessories, v. 12, no. 2, March/April 1999, pp. 124-126, ill.

Milan. Fiber optics; article originally published Dec. 7, 1998 in Business Week.

Schober, Mica. "Fiber Optics: A Glimpse Into the Future." Ceramic Bulletin, v. 66, no. 11, 1987, pp. 1584-1586.

Sjobbema, D. J. W. “Glasvezel zilveren jubilaris. Deel 1: Historie, ontwikkeling en principes.” Elektronica, v. 39, no. 21, Nov. 9, 1991, pp. 35-37+, ill.

Deventer, the Netherlands. Optical fiber silver jubilee: history, development, and principles.

<VF: Glass Fibers-Fiber Optics.>

Stix, Gary. “The Triumph of the Light: Extensions to Fiber Optics Will Supply Network Capacity That Borders on the Infinite.” Scientific American, v. 284, no. 1, Jan. 2001, pp. 80-84+, ill.

“What Exactly Are Optical Fibers?” The Leader (Corning, NY), April 2, 2002, p. 1D+, ill.

VF: Glass styles -- Specialty glasses -- Fiber optics

# Videotapes (the Rakow Library cannot loan videos or DVDs)

## At The Speed of Light. Corning, Inc., Opto-Electronics Group., 2002. 10 min., sound, color.

This brief film covers history, properties and manufacture of optical fibers, and its applications, as well as Corning’s involvement in the industry. First issued in 1990. Rakow also has 1992 & 1997 editions.

Available from Corning Inc. Optical Fiber Dept. (800-525-2524; cofic@corning.com)

Ancient Arrowheads, Roman Baseball Cards and Optical Fibers*…Blue Sky Associates, 1992.*Robert Ponton presents an overview of glass properties and making, including optical fibers. 57 min.

Case History of Materials Development: Optical Fibers*.* Materials Research Society, 1991? 47 min.

Very technical presentation on transmission, optical fiber characteristics, bandwiths, fiber draw process, etc.

Ceramics into the future [videorecording]. Vanguard Productions for American Ceramic Society Inc. S.l.]: Vanguard Productions, [n.d.,1991?] (15 min.)

There are no additional credits associated with this film. Corning Glass Works is acknowledged in the credits for this film. An overview of advanced ceramics, and their use in the automotive and aerospace industries, as well as applications for the military, bioceramics, fiber optics, industry, energy, electronics, etc. The program ends with a guide to careers in ceramic engineering.

Geometric optics [videorecording]: refraction. Northey Productions Limited. Princeton, N.J.: Films for the Humanities & Sciences, c2007. 1 videodisc (70 min.).

Videodisc release of 2006 production. 23 computer-animated video shorts showing the behavior of light as it passes through various physical substances. DVD. Closed-captioned; described video for the visually impaired. Alternate title: Light: everything you need to know

Call Number: Geometric optics: refraction

Glass, part 4.: Bending light*.*. Paul Simon/BBC, 1985. 30 min. Includes one method for making optical fibers, and a variety of uses. Since this was made in 1985, the material will not be totally up to date, and the video is no longer available commercially..

How'd they do that? [International phone calls made possible with fiber optics] [videorecording]: / CBS. How'd they do that? (Television program). [S.l.]: CBS ; [1993 or 1994]. 11 min.)

There are no additional credits with this video. This television program lasted a little over a year, it began March 10, 1993 and ended on June 1, 1994. An additional segment follows regarding a combined nursing home facility and community day care center. Jim and Jill Hall from St. Francis Extended Health Care and Child Care, combined their nursing home facility and their employee run day care center into 1 unit, opening the day care facility up to the public. Hosts Pat O'Brien and Dorothy Lucey briefly discuss the international phone call and what makes the connection possible. The viewer is then taken to a plant in Atlanta, Georgia, where optical fiber cables are manufactured. Brian Monahan of AT & T Bell Laboratories first explains what fiber optic is and then discusses the laying of fiber optic cables from the United States across the Atlantic to Europe. AT & T Bell has a fleet of ships used solely for this purpose. To begin, the cables are first securely connected here in the United States and then with the use of a ship the cable is lowered to the bottom of the ocean floor. Working 24 hours a day it takes 1 month to complete the journey from the United States to Europe. This video focuses more on the laying of the cable than the actual optical fibers. VHS. DVD. Privately copied from television.

Innovation. Light speed [videorecording]. Thirteen/WNET New York in association with Carlton International ; written, produced, and directed by Jon Palfreman. Innovation (Television program) New York: Educational Broadcasting Corporation and Carlton International ; Princeton, N.J.: Films for the Humanities & Sciences, c2004. (60 min.).

A Palfreman Film Group, Inc. production for Thirteen/WNET New York in association with Carlton International; copyright 2004 Educational Broadcasting Corporation and Carlton International "Innovation: life inspired" is a four-part series telling the stories behind the technological breakthroughs that changed lives around the world. This is primarily the story of fiber optics, but it begins by tracing the history of communications from early Greece to the telegraph, the telephone, and lasers. Includes illustrations from Corning, Inc., and The Corning Museum of Glass, regarding and the development of fiber optics at Corning Glass Works. Audiovisual files for video acquisitions has a transcript of the program. Commercially distributed.

Laser technology [videorecording]: fiber optics. Creative Video Production in affiliation with Shopware Educational Systems. Charlie Nordeck, producer. Lawrenceville, N.J.: Shopware Educational Systems, c1995. (18 min.)

"Beginning with a history of fiber optics development, the video then goes on to describe the basic principles of light and how it interacts with matter"--Container. Discusses fiber optics, photons, laser diode and the advantages of fiber optics over other communication media.

Commercially distributed.

Modern marvels. Then and now: history of glassmaking [videorecording]. Bruce Nash, producer. [New York?: History Channel?, 2001] (50 min.)

First aired on December 1, 2001. A good overview of glass history and glass manufacturing processes. History of glass and glassmaking. Topics covered include fiber optics, properties of glass, brief coverage of the beginning of glass blowing, flat glass, lenses, and 20th century glass production. Also featured are glass artists Jon Wolfe and Michael Amis, Kokomo Opalescent Glass (making stained glass), the Waterford factory, old film footage from Corning Glass Works and Steuben), the Foucault process and Pilkington float process, making a giant light bulb at CGW, the development of the ribbon machine, glass which can withstand high temperatures, research & development at Corning, glass in the future, including "Smart Glass" developed by Research Frontiers. VHS. Presumably it will be commercially distributed, but not yet in their online listing 8/05/02. The Library's copy was taped from its airing on television, and the credits do not appear.

Siecor [videorecording]: bringing innovations to light. Siecor Corporation. Hickory, N.C.: Siecor Corporation, c1993. (11 min.)

Siecor was created in 1977 as a result of collaboration between optical fiber manufacturer, Corning Glass Works and cable technology from the Siemens firm in Germany. Siecor's headquarters are located in Hickory NC, and the optical fibers are manufactured at Corning's Wilmington, NC plant. (No. 223)

**Related materials**

Fiber optics idea book. 7th ed. Barrington, N.J.: Edmund Scientific, 1994. 24 p.

Covers the principles of using plastic fiber optics (eg. Crofon) and includes a variety of ideas for its use. Includes ideas on uses for glass fiber (p. 22-24). (Popular optics library ; no. 30090-95)

Call Number: TA1800 .F44 1994

**Not in the Rakow Library**

Fiber Optics. Encyclopedia Britannica Educational Corporation; Science Pictures Ltd., 1992. 16 min.

Shows shy light in optical fibers is superior to electricity in wires for transmitting information and the special techniques used in manufacturing the fibers.

Fiber Optics Explained. Chadds Ford, PA: Berwell Productions, 1995. 4 videocassettes.

Tape 1: Using fiber optics. 18 min. Tape 2: Making light talk. 18 min. Tape 3: Putting light to work. 18 min. Tape 4: Using fiber optics. 18 min.

History of fiber optics. Renton, WA: Light Brigade, 2000. 41 min.

Based on the book City of Light: The story of fiber optics, by Jeff Hecht.

An Intro to Polymer Optical Fibers. 1996. 20 min.  
Available from: IGI Group Inc.,214 Harvard Ave Suite 200, Boston MA 02134

Toll Free**:** 1-800-323-1088; 617 232 3111

Introduction to Fiber Optic Theory and Fiber Structure. Kent, WA: Light Brigade, 1995. 25 min.

Explains the technology and uses of fiber optics.

**Websites**

About.com - invention of fiber optics <http://inventors.about.com/library/inventors/blfiberoptics.htm?terms=fiber+optics>

National Inventors Hall of Fame, Donald B. Keck Fiber Optic Wire: <http://www.invent.org/hall_of_fame/85.html>

"[A Short History of Fiber Optics](file:///\\dccane\gi\dynamic\offsite.htm%3fsite=http:\\www.sff.net\people\Jeff.Hecht\history.html)" Reproduced from the Fiber Optics Technician's Handbook.   
<http://www.sff.net/people/Jeff.Hecht/history.html>

Chronology of fiber optics by Hecht: <http://www.sff.net/people/Jeff.Hecht/chron.html>

The International Society for Optical Engineering: [www.spie.org](http://www.spie.org)

Optical Society of America, Optics and Photonics research, Optics Net: [www.osa.org](http://www.osa.org)

[Corning Glass](file:///\\dccane\gi\dynamic\offsite.htm%3fsite=http:\\www.owens-corning.com\): [www.corning.com](http://www.corning.com)

(See especially, Basic Principles of Fiber Optics: (page not available 9/11) <http://www.corningcablesystems.com/web/college/fibertutorial.nsf/introfro?OpenForm>)

Laser Focus World: <http://www.laserfocusworld.com/index.html>

[publishes papers by Hecht and others; not in Rakow Library]

**SEE ALSO: Vertical File under Glass Types--Specialty Glass—Fiber Optics**

For a wide variety of educational and informational tools contact the Corning Optical Fiber Information Center at 1-800-525-2524, or E-mail [info@corningphotonics.com](mailto:info@corningphotonics.com).

**These links may be helpful (9/2013)**

"How Fiber Optics Work" by Craig Freudenrich, Ph.D. - <http://computer.howstuffworks.com/fiber-optic.htm>

Both Corning and Schott have information about fiber optics on their websites. Don't hesitate to contact them if you have questions.

Schott: <http://www.us.schott.com/english/index.html> ; http://www.us.schott.com/english/applications/optics.html

Schott download library: <http://www.us.schott.com/english/download/index.html> (look for other resources on their website -- they also have lots of great publications.

Corning: <http://www.corning.com/index.aspx>

<http://www.corning.com/products_services/telecommunications/index.aspx>

Corning includes a "library" of resources about their products "Corning Cable Systems Technical Library" <http://catalog.corning.com/CableSystems/catalog/DocumentLibrary.aspx>

The Corning Museum of Glass has some resources on our website:

<http://www.cmog.org/glassmaking/demos/optical-fiber>

<http://www.cmog.org/article/burst-energy-glass-amplifies-light>

<http://www.cmog.org/article/getting-whole-picture-bundled-glass-fibers>

Objects: <http://www.cmog.org/artwork/optical-fiber>

<http://www.cmog.org/artwork/optical-amplifier>

For example, the The Fiber Optics in Sensory and Sustainability Applications (FOSSA) project: <http://asl.ucsc.edu/fossa>. They list a variety of important ongoing applications for fiber optics.

Fiber Optic Fabrication: <http://www.appropedia.org/Optic_Fiber_Fabrication>

Developing a Green & Sustainable Fiber Optic Infrastructure with Air-Blown Fiber Technology: <http://www.fols.org/fols_library/presentations/Kurt_Templeman.pdf>

Presentation slides for: TAG Infastructure - <http://www.slideshare.net/TAGThink/sustainability-the-all-fiber-future> (includes a list of benefits of fiber optic networks & more)

**You might be able to find out more information by contacting the Fiber Optic Association:**

The Fiber Optic Association

1119 S Mission Road, # 355

Fallbrook, California 92028 USA

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