Optical Filters

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Announcements

• A “Technical Notes” CD-ROM is available
  ▪ Includes white papers, journal articles, and notes related to this talk
  ▪ All the material on the CD is also available at the Semrock website:  www.semrock.com

  www.nature.com/nrm/posters/fluorescent/index.html
People and place

• Currently ~ 110 employees
• Main facility in Rochester, New York (~ 28,000 ft² or 2,600 m²)
• Sales offices throughout U.S.A.
Semrock products ...

The Standard in Optical Filters for Life Sciences, Lasers & Optical Systems

- State-of-the-art optical filters with the highest available performance
- Cost-effective filters with competitive performance
- All Semrock filters have proven reliability for lasting performance and are reproducibly manufactured in high volumes
Three main aspects of any “optical system”

**PRODUCE LIGHT**
- Lasers
- LEDs
- Arc lamps
- Halogen bulbs

**CONTROL LIGHT**
- **WAVELENGTH**
  - Filters
  - Dichroic Beamsplitters
  - Gratings
- **DIRECTION**
  - Mirrors
  - Lenses
  - Prisms
- **POLARIZATION**
  - Polarizers
  - Polarizing Beamsplitters
  - Waveplates

**DETECT LIGHT**
- Photodiodes
- CCDs
- CMOS arrays
- Photomultipliers

Colored components are addressable with thin-film coatings:
Semrock makes a variety of filter types

- Semrock’s products address all three major aspects of general optical systems – examples include:
  
  **PRODUCE LIGHT**
  - Laser / Source Clean-up Filters
  - Bandpass Filters

  **CONTROL LIGHT**
  - Dichroic Beamsplitters
  - Ultrabroadband Laser Mirrors

  **DETECT LIGHT**
  - Steep Edge Filters
  - Deep Notch and Multi-notch Filters
Applications for Semrock filters

**Fluorescence Instrumentation Filters**
- Fluorescence microscopy
- DNA sequencing
- In vivo imaging
- Flow cytometry
- Quantitative (q) PCR
- High content screening
- Microarray readers
- Chemical process monitoring
- Laboratory fluorometers

**Raman Spectroscopy Filters**
- Raman microscopes
- Portable Raman analyzers (handheld)
- Raman microprobes (optical fiber probes)
- Laboratory spectrometers

**Other Laser & Optical System Filters**
- Surgical laser systems (e.g., ophthalmological)
- Scientific research
- Environmental monitoring
- Laser materials processing
Why is Semrock different?

• State-of-the-art ion-beam sputtering (IBS) thin-film coating
  ▪ highly stable, low-loss, reliable, reproducible thin films
  ▪ Semrock has now made IBS a high-volume process

• Highly advanced thin-film deposition-control technology
  ▪ we routinely deposit hundreds layers of even arbitrary-thickness, for complex filters with superb spectral features

• Top optical talent – with our specific market focus we really understand your optical systems
  ▪ for the best possible designs

Over half a million ion-beam-sputtered filters delivered!
Who are Semrock’s customers?

• ~60% of Semrock’s business comes from highly-tailored optical filters for **volume OEM manufacturers** of instrumentation

• Semrock also offers an extensive line of **standard catalog products** that are *in stock* and available for immediate delivery for both OEMs and end users

• All catalog products can be **custom-sized** or shaped in a matter of days
Semrock’s parent company …

- On October 21, 2008 Semrock became part of IDEX Corporation of Northbrook, Illinois
- IDEX, ~ $1.5B corporation, manufactures and markets a range of engineered industrial products in the United States and internationally
- Semrock continues to maintain its very clear identity, and our goals (and relationships with our customers) remain unchanged!

… fluidic and specialty material solutions for precision equipment and life enhancing applications

… applied solutions associated with the movement and measurement of process critical fluids and gasses

… customization solutions for the precise measurement and control of point-of sale applications

… life saving solutions for the mission critical needs of fire, rescue and disaster management
Independent images taken by commercial customer

Semrock Filters

Identical imaging conditions

Major Competitor