

LASER CHRONOLOGY

- 1926 Albert Einstein speculates on the existence of stimulated emission, but proposes no mechanism for producing it.
- 1954 Charles Hard Townes builds the first **MASER*** at Columbia University, and a few months later Basov in the USSR build one as his doctoral thesis.
- 1957 Gordon Gould works out the basic principle and coins the acronym, **LASER**, standing for Light Amplification by Stimulated Emission of Radiation.
- 1958 Townes and Arthur Schawlow publish their seminal paper on "Optical Masers".
- 1961 Maiman pumps up his **Ruby** rod and the first laser emits coherent radiation on May 16th. He leaves the employ of Hughes Aircraft to set up the first laser manufacturing company, **KORAD**.
- 1961 Peter Sorokin and Mirek Stevenson make lasers #2 and #3 by flashlamp pumping uranium-doped calcium fluoride which emitted at 2.5 microns in November and a few weeks later they got 708 nanometer radiation out of a Samarium doped calcium fluoride crystal.
- 1961 Ali Javan at Bell Labs excites a mixture of **Helium** and **Neon** in a glass tube with radio frequencies to get it to lase at 1.15 microns**. It was not only the first **gas** laser but the first continuous-wave laser as opposed to the pulsed ones above.
- 1962 A. D. White and J. D. Rigden at Bell Labs get the **He-Ne** mixture to lase at the familiar red wavelength of 633 nanometers.
Robert Hall gets lasing action out of **Gallium Arsenide** at 77 Kelvins***.
- 1963 C. Kumar N. Patel discovers the first high-power gas laser, using **CO₂** in a tube and getting tens of milliWatts on the first try.
Spectra-Physics markets the first commercial He-Ne's, the Models 115 and 116, *Radio-Frequency Excited*, 200 hours guaranteed lifetime.
- 1963 The first ion laser is made in S-P's labs by Earl Bell and Arnold Bloom by

*Microwave Amplification by Stimulated Emission of Radiation, but some felt it stood for Means of Acquiring Support for Expensive Research.

** "You can get it to lase off your fingernail at that wavelength," quips Professor Javan in Laser Pioneer Interviews.

***77 Centigrade-sized degrees above *Absolute Zero*.

- vaporizing mercury in a tube.
- 1964 Emmett Leith and Juris Upatnieks demonstrate the holographic recording of three-dimensional objects using laser light.
Townes, Prokhorov and Basov share the Nobel Prize in Physics for developing the "laser-maser principle".
William Bridges builds the first **Argon-Ion** laser.
- 1965 Grant Fowles and William Silfvast fabricate the first **Helium-Cadmium** laser.
- 1966 Peter Sorokin uses a Ruby laser to pump the first dye laser, filled with *chloro-aluminum phthalocyanine in ethyl alcohol*.
A team at TRG, Inc. that included Gordon Gould builds the first **Copper-Vapor** laser.
- 1967 First pulsed Ruby laser hologram.
- 1970 Nikolai Basov operates the first excimer laser at the Lebedev Physics Institute.
- 1974 Bar codes are scanned by laser for pricing and inventory controls in stores.
- 1976 John M. J. Madey demonstrates a **Free-Electron** laser amplifier at Stanford University.
- 1977 Lawyers lick their chops and the laser industry is thrown into a tizzy with the granting of U. S. Patent No. 4,053,845 on "Optically Pumped Laser Amplifiers" to Gordon Gould*.
- 1980 Phillips introduces the **LaserDisc** for optical/digital storage of video for consumers.
- 1983 Sony puts **Compact Disc Players** on the market for optical/digital storage of audio for consumers.
- 1984 Lawrence Livermore Laboratories publicly announce the demonstration of a laboratory **X-Ray Laser**, emitting at 20 nanometers.
- 1998 The death of Schawlow.

*3 to 4% of the price of a laser goes to Patlex, a firm that holds the rights to this and other fundamental laser patents.

1999 Laser pointers become so prevalent that restrictions are placed on their use.

paper¹ it².
fiber optics

REFERENCES

Most of this information came from Laser Pioneer Interviews.

ENDNOTES

1. Physical Review, Vol. 112, p. 1940, (1958).
2. A. Einstein, *Mitt. Phys. Ges., Zurich*, Vol. 16, No. 18, p.47 (1916).