

Bipin Bihari

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PROFESSIONAL EXPERIENCE

Engine Research Scientist, Argonne National Laboratory (2004-Present)

Developed an electro-mechanical system to distribute high-energy laser pulses from a single laser source to each cylinder of a multi-cylinder reciprocating natural gas engine to run on laser ignition. **Patent pending.**

Designed a fiber optic high-power laser delivery system for laser-ignition application in large bore multi-cylinder reciprocating natural gas engines. Successfully run a single cylinder engine on fiber optically delivered high-energy pulses to laser spark plug as ignition source for the first time.

Devised a method of obtaining real-time spectral characteristics of the Hydrogen Combustion in a Hydrogen engine and successfully employed it to evaluate temperature profile of combustion process, while running the engine at full loads and speeds. Developing in-situ optical diagnostics for internal combustion engines using all fiber approach that will allow measurements at normal loads and speeds.

Sr. Scientist/ SBIR manager, Radiant Photonics/Omega Optics, Austin, TX (1997-2003)

Conducted, managed, and directed SBIR programs including project management, proposals & report preparation. Served as a principal investigator/project manager for several SBIR programs that involved managing these programs from initiation to successful closing along with final deliverables and reporting.

Designed and developed devices for optical, electro-optical, fiber-optic and optoelectronic applications. The tasks included clean room processing, photolithography, wet and dry etching, e-beam deposition, and test and measurement lab experiments involving precision optical alignments, CW and pulsed lasers and high-speed instrumentation.

Senior Research Fellow, Virginia Polytechnic Institute, Blacksburg, VA (1995 – 1997)

Illinois Inst. of Tech. Chicago, IL & Argonne National Lab., Argonne, IL (1994 – 1995)

Dept. of Physics, University of Massachusetts-Lowell, Lowell, MA (1992 – 1994)

Project Scientist, Center for Laser Technology, IIT, Kanpur, INDIA (1988 – 1992)

EDUCATION

Ph. D. (Physics/Laser spectroscopy), Indian Institute of Technology Kanpur, INDIA

M. Sc. (Physics, solid state electronics), Kanpur University, Kanpur, INDIA

SELECTED PUBLICATIONS (60+ articles in Journals and Proceedings)

1. Spectroscopic Diagnostics for Combustion Metrics in a Natural Gas Fired Engine, **Bihari B.**, Gupta S.B., Biruduganti M. S., M. V. Johnson and R. R. Sekar, Proceedings of the 2010 Technical Meeting of the Central States of The Combustion Institute.
2. Establishing Combustion Temperature in a Hydrogen Fueled Engine Using Spectroscopic Measurements, Stephen Ciatti*, **Bipin Bihari**, Thomas Wallner, Submitted to *Proceedings of the Institution of Mechanical Engineers, Part D, Journal of Automobile Engineering* 221 (D6) 699-711 (2007).
3. Development of Advanced Laser Ignition System for Stationary Natural Gas reciprocating engines, **Bipin Bihari**, Sreenath Gupta, and Raj Sekar, Jess Gingrich and Jack Smith, *Proceedings of ASME ICE 2005, Fall Technical Conference, September 11-14 2005, Ottawa, Canada.*

PATENTS

1. **Bipin Bihari**, Sreenath B. Gupta, Ramanujam Raj Sekar, "A Method to Distribute High-Energy Laser Pulses to Multiple Channels," US patent pending.