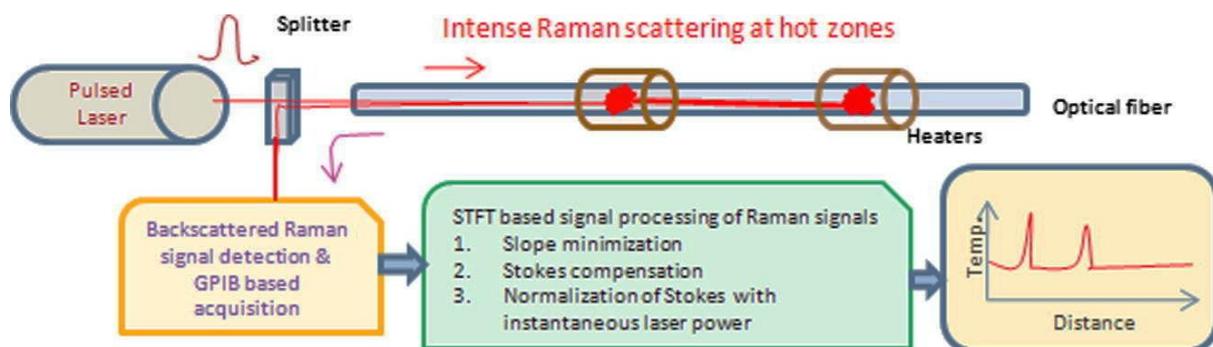
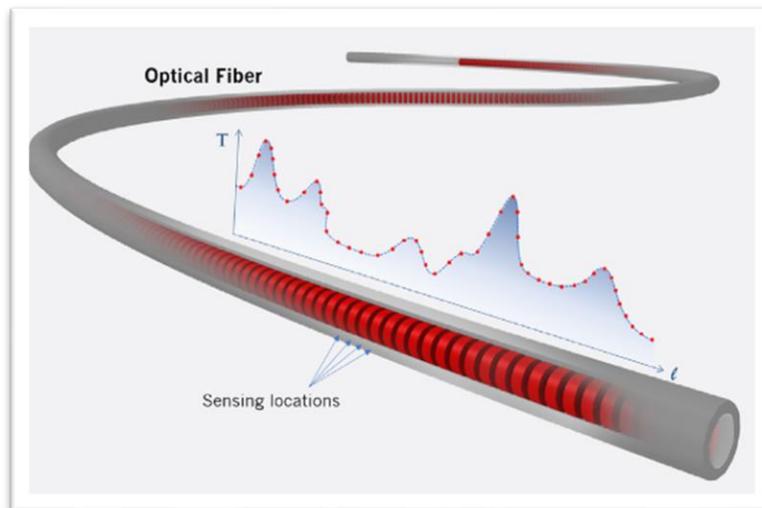


## FIBER OPTIC TEMPERATURE SENSOR

We are currently engaged in the development of fiber optic temperature sensors, a cutting-edge technology that utilizes the unique properties of optical fibers to measure temperature with high precision. This process involves several stages, including research into the materials and designs that enhance sensitivity and accuracy, as well as the integration of these sensors into various applications.

Our team is focusing on optimizing the sensor's performance in challenging environments, such as industrial settings or remote locations, where traditional temperature sensors may fall short. We are also exploring innovative methods for data transmission and real-time monitoring, which can significantly improve the efficiency of temperature measurements in critical systems.

Through collaboration with experts in optics and materials science, we aim to ensure that our fiber optic temperature sensors are not only effective but also cost-efficient and durable. Ultimately, our goal is to provide reliable solutions for industries such as aerospace, manufacturing, and environmental monitoring, contributing to advancements in technology and safety.



### Types of Fiber Optic Sensors :

Based on the number of sensing points and applications, there are 3 types of Fiber Optic Temperature Sensors that we offer :

1. Fluorescence Based Temperature Monitoring System (FluoroSenz)
2. Fiber Bragg Grating (FBG) Monitoring System (BraggSenz)

### 3. Raman Based Distributed Temperature Monitoring System (DTSenz)

Optical fiber-based high-temperature sensors utilize the unique properties of optical fibers to measure temperature in extreme environments where traditional sensors may fail. Here's an overview of how they work and their applications:

#### Principles of Operation

1. **Fiber Optics:** Optical fibers are thin strands of glass or plastic that transmit light. They are immune to electromagnetic interference and can withstand harsh environments, making them ideal for high-temperature applications.
2. **Temperature Measurement:**
  - **Bragg Gratings:** One common method involves embedding Bragg gratings within the fiber. These are periodic variations in the refractive index that reflect specific wavelengths of light. As temperature changes, the grating period changes, shifting the reflected wavelength, which can be measured to determine temperature.
  - **Raman Scattering:** Another method relies on Raman scattering, where temperature changes affect the intensity and frequency of scattered light. By analyzing this scattered light, temperature can be inferred.
  - **Fluorescence:** Some sensors use temperature-sensitive fluorescent materials that change their emission characteristics with temperature.

#### Advantages

- **Wide Temperature Range:** Optical fibers can operate in temperatures exceeding 1000°C, making them suitable for applications like gas turbines and furnaces.
- **Small Size and Lightweight:** They are thin and flexible, allowing for easy integration into structures.
- **Resistance to Harsh Environments:** They are resistant to chemicals, electromagnetic interference, and corrosion.
- **Multiplexing:** Multiple sensors can be integrated along a single fiber, allowing for distributed temperature sensing over large areas.

#### Applications

- **Industrial Monitoring:** Used in power plants, manufacturing processes, and aerospace to monitor temperatures in real-time.
- **Oil and Gas:** For downhole temperature monitoring in wells where high temperatures and pressures exist.
- **Research:** Employed in laboratories for experiments that require precise temperature measurements under extreme conditions.