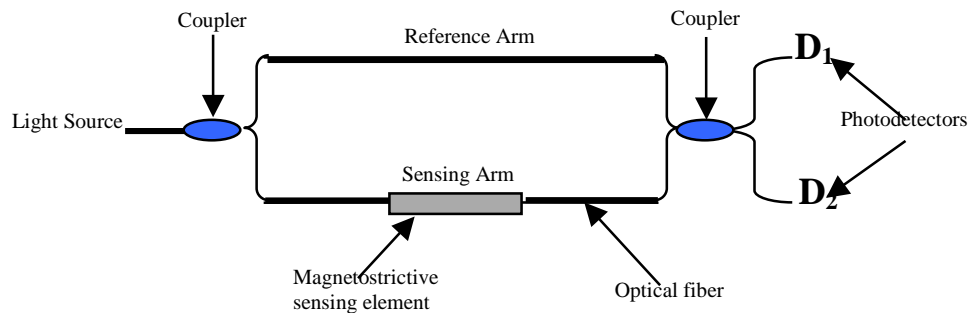


Development of a Fiber Optic Magnetic Field Sensor

The sensor design is based on the application of a modified cladding material as a magnetic field sensitive material. The design presents another application of Dr. El-Sherif's patent for on-fiber active devices. The active cladding is a magnetostrictive material that is one that undergoes changes in dimension as well as properties in the presence of a magnetic field.

The sensor design relies on the cooperative effects of the modified (active) cladding on the fiber that interacts with the evanescent field, and modulates the transmitted light in the core in a manner that can be correlated with the external magnetic field. A schematic diagram of the sensor configuration is shown below.



The optical fiber preparation, selection of candidate active cladding materials, as well as the deposition and post-treatment parameters, are all key aspects in the successful production of a precise, sensitive, and reliable sensor.