

# Fiber Optical Sensor for Explosives Detection:

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Optical sensors based on evanescent field interaction of light guided within a waveguide and surrounded by a medium to be analyzed, are well-known for their high sensitivity, their miniaturized design, high mechanical stability, cost efficiency and scalability to sensor networks. Such optical sniffer noses are strongly enhanced in sensitivity by introduction of optical resonant waveguide structures like micro ring resonators, Bragg gratings or plasmonic surface effects, enabling trace gas detec-

tion. Currently Fraunhofer HHI concentrates on the development of highly sensitive evanescent field structures in glass fibres for detection of explosives. These sensors provide specific detection selectivity by deposition of receptor coatings acting as key-lock system for adsorption of TNT or other explosives. Additionally, minimization of side effects can be realized by analysing a set of sensors with different receptors by software routines for pattern recognition of sensor signals.