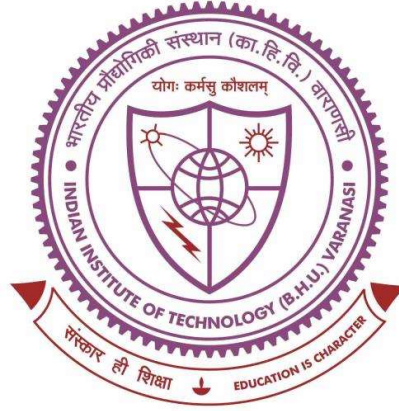


***Design and simulation of surface plasmon  
resonance based optical fiber refractive index  
sensors***



**Thesis submitted in partial fulfilment for the  
Award of Degree**

***Doctor of Philosophy***

***in***

***Physics***

**by**

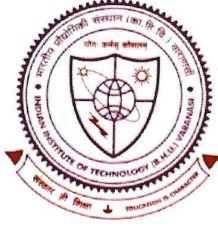
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**Sincerely**  
**(Hemant Kumar)**



*Dedicated*  
*To*  
*My Beloved*  
*Family*



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## Nomenclature

<b>TIR</b>	Total internal reflection
<b>PCF</b>	Photonic crystal fiber
<b>SPW</b>	Surface plasmon wave
<b>SPP</b>	Surface plasmon polariton
<b>SPR</b>	Surface plasmon resonance
<b>EM</b>	Electromagnetic
<b>OFS</b>	Optical fiber sensor
<b>SMF</b>	Single-mode fiber
<b>MMF</b>	Multi mode fiber
<b>M-TIR</b>	Modified total internal reflection
<b>FDFD</b>	Finite difference frequency domain
<b>FDTD</b>	Finite difference time domain
<b>FEM</b>	Finite element method
$n_{eff}$	Effective mode index
<b>RF</b>	Radio frequency
$\beta$	Propagation constant
<b>SP</b>	Surface plasmon
<b>ATR</b>	Attenuated total reflection
<b>PDE</b>	Partial differential equation
<b>TE</b>	Transverse Electric
<b>TM</b>	Transverse Magnetic
<b>Au</b>	Gold
<b>Cu</b>	Copper

<b>Ag</b>	Silver
<b>TiO<sub>2</sub></b>	Titanium dioxide
<b>AZO</b>	Al-doped ZnO
<b>PML</b>	Perfect match layer
<b>Fig.</b>	Figure
<b>RI</b>	Refractive index

