* **Hollow Core-Based Photonic Crystal Fiber for Oil Detection**
* **The computational results indicate that the relative sensitivity is 85.591%, 84.648%, 82.625%, 82.683%, and 79.161%, respectively, at f = 2.2 THz**
* **The proposed sensor also has effective areas 7.22×10-8 um2, 7.09 ×10-8 um2, 6.83×10-8 um2,7.09 ×10-8****um2, 6.5231 ×10-8 um2. In addition, the effective material loss for sunflower oil, muster oil, coconut oil, and olive oil, has been found to be 0.02561 cm-1, 0.027054 cm-1, 0.030322 cm-1, 0.028854 cm-1 ,0.035427cm-1 respectively. Moreover, the proposed sensor also has low confinement loss are 1.55 ×10-8** **dB/m, 1.63×10-8 dB/m, 1.31×10-8 dB/m, 1.99×10-8 dB/m, 4.0345×10-8 dB/m**