

# **Abstract**

**Heba Ahmed Fayed**

## **A Wide Range Tunable Fiber Bragg Grating Using Fast Changeable Electromagnetic Force**

We demonstrate a silica-based tunable fiber Bragg grating (TFBG) filter with a wavelength tuning range over 60 nm. A magnetically TFBG package is employed to obtain a wide wavelength tuning range from 1540 to 1602 nm which covers the entire C band and most of the L-band. TFBG is achieved by varying an input current to a solenoid, resulting in an electromagnetic force, used as a strain (tension and compression) on the FBG. This approach is fast, has a broad band of tuning wavelengths and achieves a power reduction as no continuous supply of power is needed to maintain the set shift, due to the latch system used. This novel TFBG device can have a variety of applications in optical fiber communication systems such as programmable optical add/ multiplexers (OADMs), dispersion compensators and tunable lasers.