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Model and Simulation of a Polymer-Coated Fiber Bragg Grating Sensor SHAO JUN LIU, Junhua School of Electrical Engineering, Xi'an Jiaotong University, Xi'an, China — Embedding a fiber Bragg grating with a polymer could improve the pressure sensitivity of a sensor. Based on the theory of elastic mechanics, we considered the polymer with optical fiber as transverse isotropy, which is encapsulated in the metal tube and with the three components of stress not equal. The relation between the shift of Bragg wavelength and the pressure is built. It is found that different physics models will induce different pressure sensitivity, and both increasing the diameter of the cylinder polymer and reducing its Young's modulus can raise the pressure sensitivity. This analysis is helpful in designing a sensor according with engineering demands.

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