

Compact Lissajous Endomicroscopy driven by a Piezoelectric Tube Actuator with an Optimal Scanning Pattern

Cheol Song¹
JINTAEK IM
¹ DGIST

A piezoelectric tube actuator (PTA) has been widely used in a miniature resonant fiber scanning system due to its low operation voltage and high-frequency bandwidth. Several designs for PTA-based endomicroscopic probe has been proposed. However, it is hard to meet dimensional requirements for compatibility with a commercial endoscopy. Here, we present a compact PTA-based Lissajous endomicroscopic probe using a film-based frequency separator and parallel arrangement. In addition, an optimal scanning pattern is determined by considering resonant frequency, and real-time pattern regulation is achieved by the feedback control on a driving phase offset. The acquired image from a resolution test chart is shown.