

Medical > In Vivo > Other material

69

Optimal detection pinhole for lowering speckle noise while maintaining adequate optical sectioning in confocal reflectance microscopes.

Glazowski C, Rajadhyaksha M.; J Biomed Opt. 2012 Aug;17(8):085001. doi: 10.1117/1.JBO.17.8.085001.

ABSTRACT

Coherent speckle influences the resulting image when narrow spectral line-width and single spatial mode illumination are used, though these are the same light-source properties that provide the best radiance-to-cost ratio. However, a suitable size of the detection pinhole can be chosen to maintain adequate optical sectioning while making the probability density of the speckle noise more normal and reducing its effect. The result is a qualitatively better image with improved contrast, which is easier to read. With theoretical statistics and experimental results, we show that the detection pinhole size is a fundamental parameter for designing imaging systems for use in turbid media.