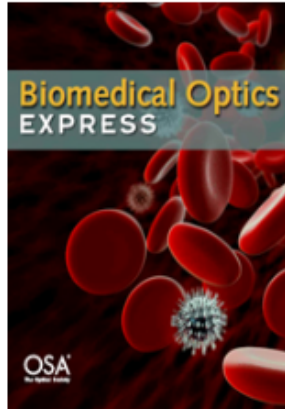


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## About the Journal

Biomedical Optics Express will become OSA's principal outlet for serving the biomedical optics community with rapid, open-access, peer-reviewed papers related to optics, photonics and imaging in the life sciences. The journal scope encompasses theoretical modeling and simulations, technology development, and biomedical studies and clinical applications.

Editor-in-Chief: Joseph A. Izatt, Duke University

ISSN: 2156-7085

Frequency: Rapid article-at-a-time publication, Monthly issues

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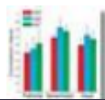
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### Welcome to Biomedical Optics Express

Introduction from the Editors of Biomedical Optics Express.  
*Biomedical Optics Express*, Vol. 1 Issue 1, pp.1-1 (2010)



### Resting state functional connectivity of the whole head with near-infrared spectroscopy

Resting state connectivity aims to identify spontaneous cerebral

## Video Discussion



Videos with Editor and Author commentary (coming soon to other journals)

Newly Published shows Latest articles display with thumbnail images and popup abstracts

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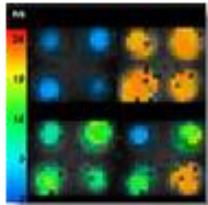
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Call For Papers shows both Feature calls and other journal-specific information

# Article Abstract Page

Editor: Joseph A. Izatt Vol. 1, Iss. 5 — Dec. 1, 2010 pp: 1302–1308

[Optics InfoBase](#) > [Biomedical Optics Express](#) > [Volume 1](#) > [Issue 5](#) > Page 1302



## Fluorescence lifetime biosensing with DNA microarrays and a CMOS-SPAD imager

Gerard Giraud, Holger Schulze, Day-Uei Li, Till T. Bachmann, Jason Crain, David Tyndall, Justin Richardson, Richard Walker, David Stoppa, Edoardo Charbon, Robert Henderson, and Jochen Arlt

Biomedical Optics Express, Vol. 1, Issue 5, pp. 1302-1308 (2010)  
doi:10.1364/BOE.1.001302

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### OCIS Codes:

- (120.3890) Instrumentation, measurement, and metrology : Medical optics instrumentation
- (170.2520) Medical optics and biotechnology : Fluorescence microscopy
- (170.3650) Medical optics and biotechnology : Lifetime-based sensing
- (280.1415) Remote sensing and sensors : Biological sensing and sensors

### ToC Category:

Biosensors and Molecular Diagnostics

### Citation

Gerard Giraud, Holger Schulze, Day-Uei Li, Till T. Bachmann, Jason Crain, David Tyndall, Justin Richardson, Richard Walker, David Stoppa, Edoardo Charbon, Robert Henderson, and Jochen Arlt, "Fluorescence lifetime biosensing with DNA microarrays and a CMOS-SPAD imager," *Biomed. Opt. Express* **1**, 1302-1308 (2010)  
<http://www.opticsinfobase.org/boe/abstract.cfm?URI=boe-1-5-1302>

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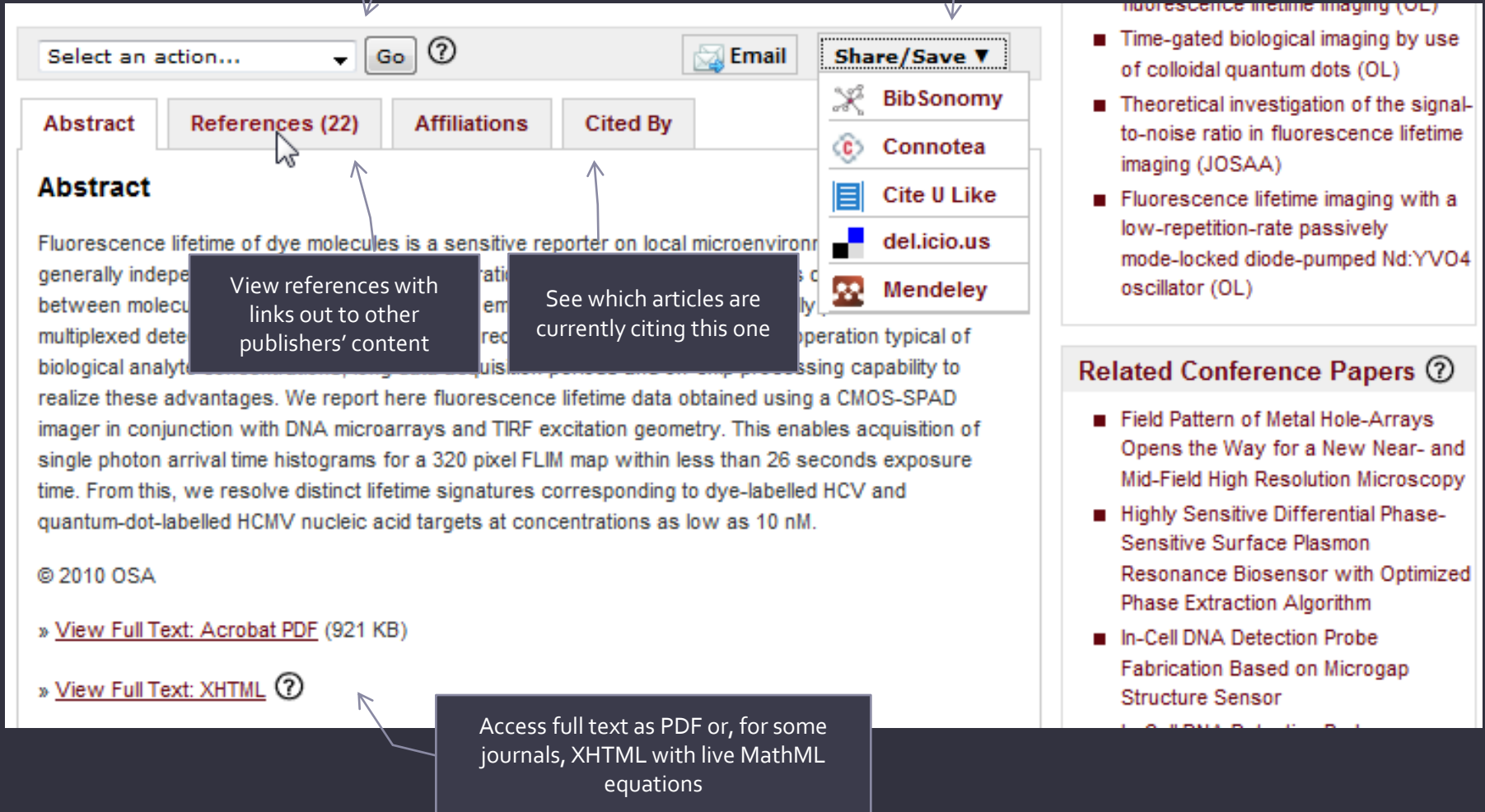
### Related Journal Articles (?)

- Fluorescence lifetime imaging with picosecond resolution for biomedical applications (OL)
- Whole-field optically sectioned

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**Abstract**

Fluorescence lifetime of dye molecules is a sensitive reporter on local microenvironment generally independent of the excitation intensity. This property is exploited in multiplexed detection of biological analytes. The fluorescence lifetime is a property of the fluorophore and is generally independent of the excitation intensity. This property is exploited in multiplexed detection of biological analytes. We report here fluorescence lifetime data obtained using a CMOS-SPAD imager in conjunction with DNA microarrays and TIRF excitation geometry. This enables acquisition of single photon arrival time histograms for a 320 pixel FLIM map within less than 26 seconds exposure time. From this, we resolve distinct lifetime signatures corresponding to dye-labelled HCV and quantum-dot-labelled HCMV nucleic acid targets at concentrations as low as 10 nM.

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Fluorescence lifetime imaging (OL)

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- Theoretical investigation of the signal-to-noise ratio in fluorescence lifetime imaging (JOSAA)
- Fluorescence lifetime imaging with a low-repetition-rate passively mode-locked diode-pumped Nd:YVO4 oscillator (OL)

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- Highly Sensitive Differential Phase-Sensitive Surface Plasmon Resonance Biosensor with Optimized Phase Extraction Algorithm
- In-Cell DNA Detection Probe Fabrication Based on Microgap Structure Sensor