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[Image PDF (1494K)] [References]

## **Ultrafast Time-Resolved Imaging Gate**

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**Abstract:** Ultrafast time-resolved imaging gate provides interesting tools for observation of ultrafast phenomena, three-dimensional shape measurements, and biomedical imaging. In this paper, various time-resolved gating techniques based on electronic methods, coherence of light, or optical nonlinear effects are reviewed with regard to potential of time-resolved imaging. As a highly functional time-resolved imaging gate with femtosecond gating time and light amplification, we present here a femtosecond amplifying optical Kerr gate, which is realized by the optical Kerr effect in an excited state with light amplification and two perpendicularly polarized pump pulses with time delay. Furthermore, to evaluate its potential of practical application, we demonstrate three-dimensional shape measurements of a colored transparent object and a diffusing object with use of the femtosecond amplifying optical Kerr gate.

Key Words: <u>Time-resolved gate</u>, <u>Time-resolved imaging</u>, <u>Femtosecond laser</u>, <u>Optical</u> nonlinear effect, <u>Optical Kerr gate</u>

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