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**Optical thermocouples for explosive fireballs.**<sup>1</sup> HERGEN EILERS, BENJAMIN ANDERSON, NATALIE GESE, RAY GUNAWIDJAJA, MICHAEL MARK, Washington State University — We have developed optical thermocouples (OTCs) for use in explosive fireballs. The OTC consist of an optical fiber with a fluorescent phosphor coating. The phosphor, Dy-doped YAG, is a well-known twocolor thermometry material, which is excited with a pulsed ultraviolet laser. As temperature increases, a higher excited energy level is populated and starts to emit fluorescence. Temperature can be determined by monitoring the intensity ratio of two fluorescence bands. We recently conducted our first field tests of these OTCs and will report on their performance as well as further design improvements.

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