



**National Science Foundation**  
**4201 Wilson Boulevard**  
**Arlington, Virginia 22230**

**NSF 14-091**

## **Dear Colleague Letter - Optics and Photonics**

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Date: July 16, 2014

Dear Colleagues:

Optics and photonics are key enabling technologies that impact society in a multitude of areas including information and communications, imaging and sensing, healthcare, energy, manufacturing, and national security. With current economic trends of innovation becoming increasingly international, it is a critical time for the National Science Foundation (NSF) to ensure support of fundamental research and disruptive optical technologies that will strongly benefit the nation's scientific and economic health as well as its future workforce. In August 2012, the National Research Council published its report of the U.S. National Academies study, "[Optics and Photonics: Essential Technologies for Our Nation](#)." In April 2014, a Fast Track Action Committee on Optics and Photonics, sanctioned by the Committee on Science of the National Science and Technology Council, published its [report](#). Both reports clearly document the critical importance of fundamental research on optics and photonics, its strong societal impacts as enabling technologies, and the urgency of enhanced Federal support in this field.

NSF has identified optics and photonics research and education as a key area of interest, which is currently supported mainly through core programs residing in all Directorates. Because the field is inherently interdisciplinary in nature, often requiring expertise across traditional disciplinary boundaries, NSF, with its comprehensive coverage of various disciplines, will enable the research community to achieve breakthrough scientific and technological progress.

Through this Dear Colleague Letter, NSF encourages innovative research proposals on optics and photonics that are relevant to one or more Divisions in the Directorates for Engineering (ENG), Mathematical and Physical Sciences (MPS), or Computer and Information Science and Engineering (CISE). Topics of particular interest for Fiscal Year 2015 are (a) the light-matter interaction at the nanoscale that encompass materials, devices, and systems, such as but not limited to low-loss metamaterials, plasmonics, and quantum phenomena that could impact computation, communication, and sub-wavelength resolution detection/imaging; and (b) novel terabit/second and above communication systems, especially those integrating devices and systems that advance the state of the art in networking, high-performance computing, and computer architecture.

Proposals on optics and photonics that would particularly benefit from joint review can be submitted to a primary Program, while secondary Program(s) in another Division(s) can be identified in the Proposal Cover Sheet. Proposals that are candidates for co-review must bear a title that starts with the acronym "OP:" (for Optics & Photonics) and be submitted within the regular proposal submission window of the primary Program in Fiscal Year 2015. The proposals may span a combination of experiment, theory, and simulation, if appropriate. NSF recommends that researchers first contact their Program Officer for details on appropriate programs and the specifics for proposal submission in their respective Divisions.

The main points of contact, representing the participating Directorates and Divisions of this Dear Colleague Letter, are:

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