



Air Force Research Laboratory|AFRL

Science and Technology for Tomorrow's Air and Space Force

Success Story

DR. RICHARD SOREF ELECTED IEEE FELLOW



The Institute of Electrical and Electronic Engineers (IEEE) recognized Dr. Richard Soref, of the Sensors Directorate, by electing him as an IEEE Fellow for his contributions as research scientist in the field of silicon-based photonic and optoelectronics. Each year IEEE recognizes the achievements of its members by selecting a distinguished group of recipients to become IEEE Fellows.



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Accomplishment

Dr. Soref helped bring into existence a new and commercially important technology with his contributions to silicon optoelectronics (SiOE). Prior to his SiOE work, the technical community was not aware of the practical integrated-photonics aspects of silicon. His efforts ensured a much faster and more complete development of SiOE technologies.

Background

Dr. Soref invented and developed a new family of silicon-based photonic and optoelectronic components for direct integration with electronic circuits on a silicon chip or wafer. Construction of the circuits, like the photonics, would involve using silicon-germanium alloys. The photonic components include several types of low-loss optical waveguides—some made with alloys, others made with silicon resting upon a buried insulating layer. Dr. Soref also developed several active components: an optical switch for routing optical signals, a photodetector integrated on a waveguide, a single-mode waveguide that couples well to a glass fiber-optic line, and an electronically pumped laser that consists of a stack of silicon-germanium quantum wells. Dr. Soref designed the laser to emit in the far infrared region. Most of these components are world firsts.

Dr. Soref performed many of these projects collaboratively, but his leadership in the field of Si research and development was instrumental in the success of the collaborations. Over a 16-year period, he expertly advocated Si-based optoelectronics at universities, the Department of Defense, corporations, and at international conferences. Worldwide growth of this technology resulted, in part, from his efforts and stimulation.

Sensors
Awards and Recognition

Additional information

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