



Focus Areas: Photonics, MEMS, & Nanotechnology

Photonics, MEMS (MicroElectroMechanical Systems), and nanotechnology are the highest of high-tech, but are increasingly incorporated into familiar products such as cell phones, computer games, and medical devices, enabling undreamed-of functionalities. For example, MEMS microphones, motion sensors, RF switches, and camera focusing elements are all currently being used in handheld devices. TIPRA can help you to deal with the implications in your business of these new technologies, which are sources of extraordinary market growth as a consequence of breaking capabilities barriers encountered in electronics, communications, computing, biomedicine, and consumer products.

Photonics is the technology of generating and harnessing light and other forms of radiant energy whose quantum unit is the photon, and includes traditional optics as well as fiber optics. Photonics applications range from (solar) energy generation to detection to communications and information processing.

MEMS is the technology of using integrated circuit fabrication processes to make sensors or actuators with moving parts. MEMS devices are used in projection television, miniature transducers including microphones, motion and pressure sensors, and microfluidics for biomedical research and diagnostics.

Nanotechnology refers to synthesizing, engineering, or manipulating matter at size ranges under 100 nanometers, i.e., at the molecular scale, where novel and often surprising properties arise from quantum effects or from extreme surface to volume ratios. It is being studied and applied in almost every scientific and technical discipline, including many clean technologies that use performance enhancements it offers.

Some topic areas in which TIPRA network members have particular depth include:

- Fiber optic communications devices and systems
- Photonic and electronic component packaging and interconnects
- Input/output hardware, optical and acoustic
- Biophotonics and microfluidics
- MEMS devices, fabrication, processes, and integration
- Optical MEMS (MOEMS)
- Optical and nanostructure lithography
- Nanopositioning and instrumentation
- Nanomaterials and quantum dots

Focus Leader: Dr. Gregory Magel

Greg Magel has led R&D activities at Texas Instruments, Corning, and an optical networking equipment startup, as well as consulting in the form of R&D, design and project management, training, and business and intellectual property advice for both Fortune 500 and small and growing technology-based companies. In addition to publishing over 20 papers in technical journals as a research scientist, he is an active inventor with over 19 issued and pending U.S. patents. His technical research and consulting are in the areas of nonlinear optics, fiber and integrated optics, optical CDMA, optical MEMS, optical product design, and nanophotonics. Senior Member of the IEEE, and member, Optical Society of America, where he has served as Chairman of the Photonics Division. Dr. Magel holds a Ph.D. from Stanford University, and is a Patent Agent registered to practice before the U.S. Patent and Trademark Office.

About TIPRA:

TIPRA is a managed, global invitation-only network of over 1000 world-class senior technical and market experts in selected economically-important high-tech industries. TIPRA network members are individually selected for their deep competence and high professionalism. They typically have 20+ years of experience in their industries, having held leadership roles in both large and small businesses. TIPRA network members have delivered hundreds of consulting projects in their fields in the last few years. They have worked with C-level managers of companies, investors, regulators, standards and industry forums, and provide answers and solutions to their complex technology and business problems.

For more information on TIPRA's capabilities in these technical areas, please contact Dr. Greg Magel, +1 972.897.5544, email gmagel@tipra.com , or visit our web site at www.tipra.com .