

Nanotechnology Investments in Turkey National Nanotechnology Research Center Project

Mehmet BAYINDIR

*UNAM, Bilkent University, Ankara, Turkey
mb@bilkent.edu.tr*

In the last decade nanotechnology research attracted great interest due to its expected critical and potential applications. Globally, governments and companies are investing billions of US dollars each year to establish and promote nanotechnology related research. Currently there are over 320 nanotechnology centers in the world. Starting in 2006, Turkish Government has also been active in nanotechnology investments, through which a number of research centers are already established. UNAM is the first national institute for dedicated nanotechnology research in Turkey, established by Bilkent University with government funding through The State Planning Organization of Turkey. UNAM has quickly become one of the most sophisticated research centers in the Mediterranean and Middle East Region, and attracted over 150 full time researchers from local universities, over 400 users from academia and industry nationally, and also from regional countries. In the first part of my talk, I discuss nanotechnology investments in Turkey and UNAM. In the second part, I will introduce an actual nanotechnology research project developed recently in my research group at UNAM. This novel technique involves reducing the size of semiconductor or polymer rods/tubes into sub 100 nm nanowires and nanotubes with indefinitely-long length scales while preserving the shape of the initial structures.

Mehmet Bayındır received his B.S., M. S., and Ph.D. degrees in physics from Bilkent University, Ankara, Turkey in 1995, 1997, and 2002, respectively. During his M. S. thesis work, he focused on several problems in theoretical condensed physics such as impurity effects in high-temperature superconductivity, localization in quantum Hall systems, persistent current in mesoscopic rings, and Bose-Einstein condensation in low-dimensional systems. He and his co-worker predicted the possibility of two-dimensional BEC in interacting, trapped Bose gases. Dr. Bayındır's Ph. D. thesis concentrated on the physics and applications of photonic band gap materials. His pioneering work on coupled-cavity structures in photonic crystals has drawn a considerable amount of interest in recent years (cited over 600 times in citation-index journals).

As a research scientist at the Massachusetts Institute of Technology, he worked on the design, fabrication, and characterization of various types of fibers, made of conducting, semiconducting and insulating materials in intimate contact and in a variety of geometries that will pave the way for the future development of fibers, and woven fabrics with novel optical and electrical properties.

Currently, he is assistant professor in Department of Physics, Bilkent University, Turkey. He is also the assistant director of National Nanotechnology Research Center project funded by State Planning Organization of Turkey. Together with Prof. Salim Çıracı, he has also started the Material Science and Nanotechnology Program within the Science Faculty of Bilkent University as a graduate program aiming to educate top notch Ph.D.'s for technologically hungry Turkish industry.

He is the author of a book (in Turkish), over 45 citation-index journal papers, and more than 35 refereed conference papers. He also holds 3 issued US patents. He serves as a reviewer for several scientific journals including Physical Review Letters, Optics Letters, Physical Review B, Physical Review E, Optics Express, Journal of Optical Society of America B, Physics Letters A, and IEEE Journals.

He won the young scientist prize of the Turkish Scientific and Technical Research Council (TUBITAK) in 2006 and The Young Scientists Award of Turkish Academy of Sciences (TUBA). He was the winner of the Optical Society of America's 2001 New Focus Award and 2005 MIT best poster award.