

CoE for Functional SURfaces and interfaces for Nano diagnostics



A memory from the Winter Nanotechnology Boot Camp for High School Students
Jointly Organized by SUNUM and EFSUN (organized since 2018)

CoE for Functional SURfaces and interfaces for Nano diagnostics

Executive Board



Prof. Ali Koşar (Director, ME*)



Asst. Prof. Murat Kaya
Yapıcı (EE*)



Prof. Kürşat Şendur (ME)



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Assoc. Prof. Gözde İnce (MAT)



Prof. Funda Yağcı Acar (Koç Univ.)



Assoc. Prof. Emre Erdem (MAT)

- * MAT: Materials Science&Nanoengineering Program
- * ME: Mechatronics Program
- * EE: Electronics Engineering Program

CoE for Functional SURfaces and interfaces for Nano diagnostics Advisory Board



Sadık Esener
Director, Nano-Tumor Center,
University of California at San Diego



Mehmet Toner
Professor of Bioengineering,
Harvard Medical School



M. Pınar Mengüç
Director, Centre for Energy, Environment and Economy,
Ozyegin University



Yusuf Leblebici
President,
Sabanci University



Yoav Peles
Mechanical Engineering Department Head,
University of Central Florida



Pamir Alpay
Materials Science Engineering Department Head,
University of Connecticut



Mehmet Yıldız Vice President for Research and Development, Sabanci University

CoE for Functional Surfaces and interfaces for Nano diagnostics

Number of
Research
Staff

36

Number of
SU /SUNUM
Research Staff

14

Number of
Post Docs
Su/SUNUM

6

Number of
Ph.D.
Students
SU/SUNUM

34

Number of
M.S.
Students
SU/SUNUM

22

Objectives are:

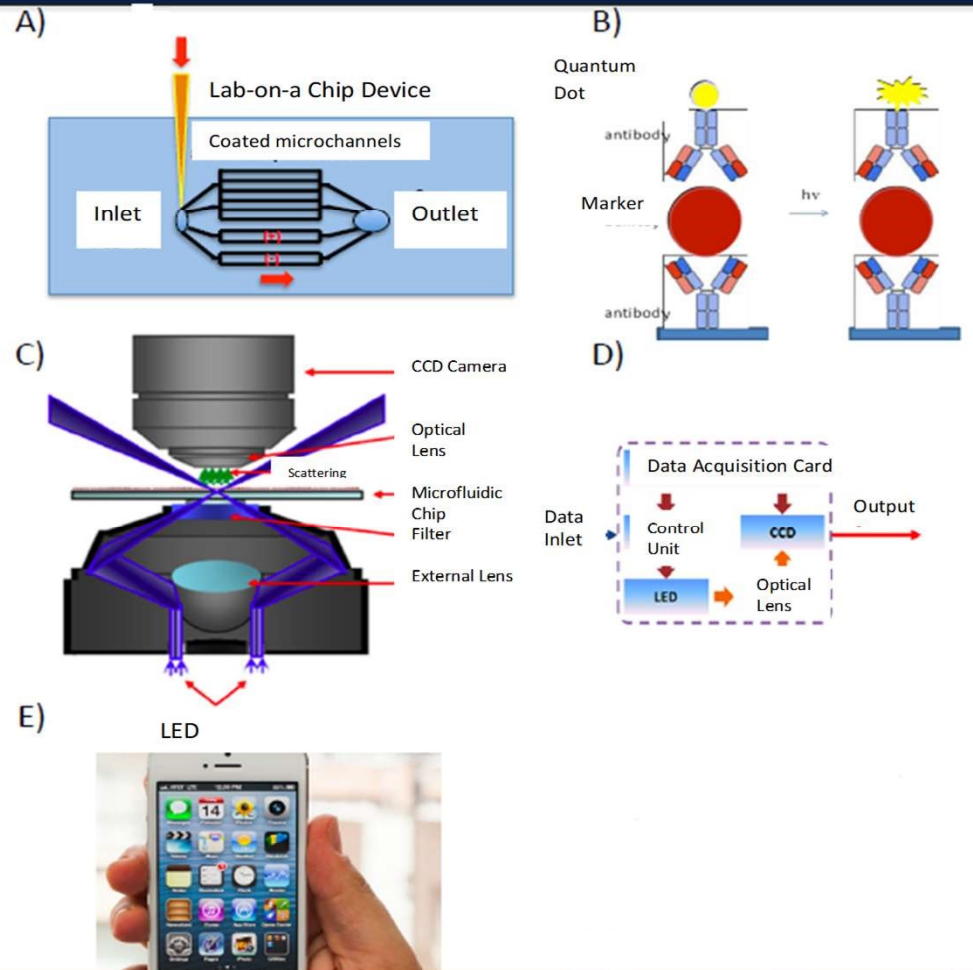
- to bring together highly qualified researchers to generate high impact research and original results with a focus on science and technology of interfaces and surfaces needed for novel devices for a number of applications.
- to become a “Center of Attraction” through its high impact research output that would get the attention of high quality researchers from around the world.
- to generate novel approaches and scientific knowledge on a very important and yet in-demand study area of new generation diagnostic tools in medicine.



EFSUN started as a collaboration platform bringing together researchers from a wide spectrum of activity including:

- Mechatronics,
- Materials Science and Engineering,
- Electronics Engineering,
- Biology and biotechnology,
- and even medicine...

Core research description



- The center addresses challenges in nano diagnostics through the usage of micron- and submicron sized systems exploiting the tools of materials development and science, nano technology, nano/microfluidics and power generation.
- The center focuses on an in-depth understanding of material fundamentals, surface and interface interactions that are vital to understand for novel IC devices and functional optoelectronic systems as well as heat and fluid flow with targeted device design.
- Design of nanodiagnostic tools also benefit from the gathered knowledge in conjunction with biotechnologists.

CoE for Functional **SU**rfaces and interfaces for **N**ano diagnostics / Research Outputs

Number of
Journal articles
within 12 months
SU/SUNUM

54

Granted Budget of
New Project Grants
in 2020

22.064.000

TL

Number of
Applied and
Granted Patents
within 12 months

7

A demonstration of capacity for future plans...

Note: These contributions are from 14 members from SU and SUNUM. These values should be at least doubled to account for all the members.

Some Achievements and Activities

Interdisciplinary Projects :

- NANOSIS-TUBITAK 1004-with cooperation of SUNUM-Representative Center for Sabanci University-“NANOSIS R&D and Innovation Collaboration Platform” with Research Program the research program titled “Development of Protein based Microfluidic Biochips for Diagnosis”. TÜBİTAK 1004, Partnership with SUNUM, 9,000,000 TL allocated for EFSUN
- The SUTAB Project: (Sabanci University Tissue Ablating Bubbles)-Medical Use of Small Scale Cavitating Flows, TUBITAK 1003, 1,000,000 TL
- Royal Academy of Engineering Newton Fund: Bipilic surfaces and Diagnosis based on Evaporation.
- The ongoing project budget is currently more than 4,000,000 Euro. The budget of pending project applications (under review) exceeds 4,000,000 Euro.

Recent Activities:

- EFSUN organized “Best Article Competition on the 24th August 2020:
<https://gazetesu.sabanciuniv.edu/en/science-and-tech/winners-efsun-best-article-competition-announced>
- The Winter Nanotechnology School for High School Students was held between 20 January and 24 January 2020 in cooperation with Sabanci University SUNUM and EFSUN Centers:
<https://gazetesu.sabanciuniv.edu/kampusten/kis-okullari-ile-lise-ogrencileri-teknolojiyi-tatilde-ogrendi>

CoE for Functional SURfaces and interfaces for Nano diagnostics / Contributions

Contributions to SU:

- EFSUN is a 'Research Powerhouse' at Sabanci University.
- EFSUN is a bridge between Sabanci University and SUNUM and contributes to the coordination activities.
- EFSUN provides valuable contributions to Schools for High School Students.
- EFSUN provides a stimulating environment for both scientists and students and significantly increases the visibility and ranking of SU.

Contributions to TURKEY:

- EFSUN is a 'Center of Attraction' for outstanding researchers and provides a collaboration platform in related research topics.
- EFSUN sets a very nice example for competitive interdisciplinary research in TURKEY.
- EFSUN is on its way to becoming a career development and training ground for young skilled scientists and engineers.