

Center of Excellence for Functional SURfaces and interfaces for Nano diagnostics-EFSUN

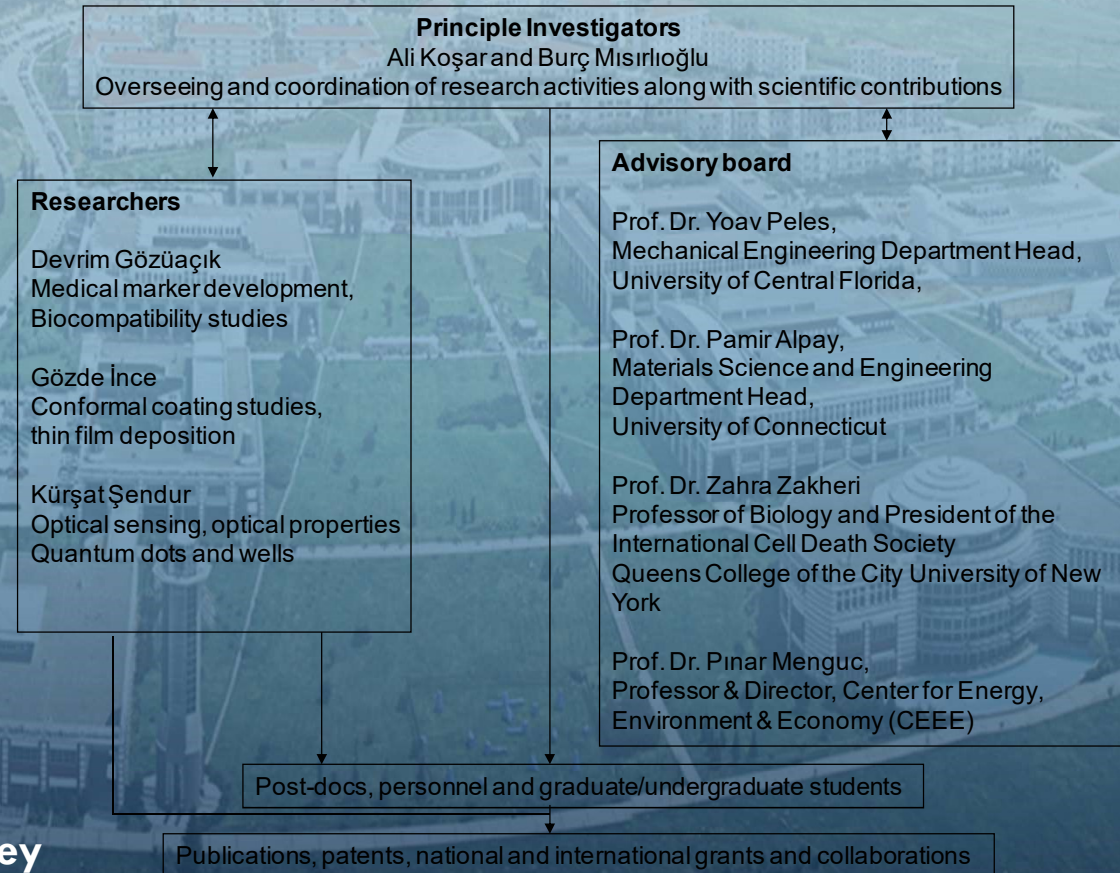
Summary of Activities in 2021



**Souvenir from the Winter Nanotechnology Boot Camp for High
School Students Jointly Organized by SUNUM and EFSUN**

Our Approach in 2016

- Our approach was not conventional
- Conventional approach: From top to down
- Conventional:
 - First a popular topic
 - Convince important people (usually with impossible targets)
 - Get a large fund
 - Involve industry
 - Build a huge facility without critical mass
 - Hire people
- Our approach:
 - Start from a core group
 - Decide on a topic: not too broad, not too narrow
 - Growth based on snowball effect
 - Self sufficiency to avoid waste of resources and money
 - Investment in outstanding researchers rather than in buildings
 - Excellency in fundamental science
 - Collaborative efforts



Meetings and workshops

- Stimulating environment
- Platform for possible collaboration and learning new things
- Dinner and fun are a big plus 😊



Best Paper Award Competition

- Traditional and international
- Platform for listening to excellent talks and learning new things
- Recognition of achievements of outstanding young scientists
- Motivation for performing high impact research in Turkey



Sabancı Üniversitesi

EFSUN BEST PAPER AWARD COMPETITION

ATTENDANCE FREE via ZOOM
for ZOOM link details, please email:
Emre Erdem
emre.erdem@sabanciuniv.edu



17 August 2021

09:30 Opening speeches

Time	Applicant / Presenter	Institute	Corresponding
09:40-09:50	Aleyna Maria Cimbora	Univ. Politehnica	Anton Fico
09:50-10:00	Mahmud Kauchemkhan	Koc University	Reyhan Acar Yagci
10:00-10:10	Sorosh Niaz	Sabancı University	Ali Kassar
10:10-10:20	Faezeh Ghobadiani	Ege University	Suna Temur
10:20-10:30	Fatma Vural Ciloglu	Erciyes University	Ömer Aydin
10:30-10:50	break	break	break
10:50-11:00	Fazaili B. Talakajari	Sabancı University	Ali Kassar
11:00-11:10	Muhammed Moulahoum	Ege University	Suna Temur
11:10-11:20	Sena Su Torun	Marmara Univ.	Oguzhan Gunduz
11:20-11:30	Seser Özener	İYTE	Umit Hakan Yildiz
11:30-11:40	Songül Ulag	Marmara Univ.	Oguzhan Gunduz
11:40-11:50	Jury evaluation	Jury evaluation	Jury evaluation
11:50-12:10	Ceremony	Ceremony	Ceremony

Convenor:
• Emre Erdem - Sabancı University

Jury members:
• Sibel Cetinel - SUNUM
• Özlem Kutlu - SUNUM
• Rükan Genç - Mersin University
• Ozan Akdoğan - Bahçeşehir University

1. Prize- 3000 ₺
2. Prize- 2000 ₺
3. Prize- 1000 ₺

EFSUN :The Center of Excellence for Functional Surfaces and Interfaces for Nano diagnostics



EFSUN
“En İyi Makale Ödülü”

Sabancı Üniversitesi

SU-SUNUM-EFSUN Joint Summer and Winter Applied Nanotechnology Schools for High School Students



CoE for Functional SURfaces and interfaces for Nano diagnostics

Executive Board



Prof. Ali Koşar (Co-Director, ME*)



Assoc. Prof. Gözde İnce (MAT)



Asst. Prof. Murat Kaya
Yapıcı (EE*)



Prof. Kürşat Şendur (ME)



Prof. Funda Yağcı Acar (Koç Univ.)



Prof. Burç Mısırlıoğlu (Co-Director, MAT*)



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. Pinar Mengüç
Director, Centre for Energy, Environment and Economy,
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Yusuf Leblebici
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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

Center of Excellence for Functional SURfaces and interfaces for Nano diagnostics (2021)

Number of
**Research
Staff**

39

Number of
**SU /SUNUM
Research Staff**

16

Number of
**Post Docs
SU/SUNUM**

8

Number of
**Ph.D.
Students
SU/SUNUM**

33

Number of
**M.S.
Students
SU/SUNUM**

34

Objectives:

- to bring together highly qualified researchers to generate high impact research and original results with a focus on science and technology needed for efficient nanodiagnostic tools.
- 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.

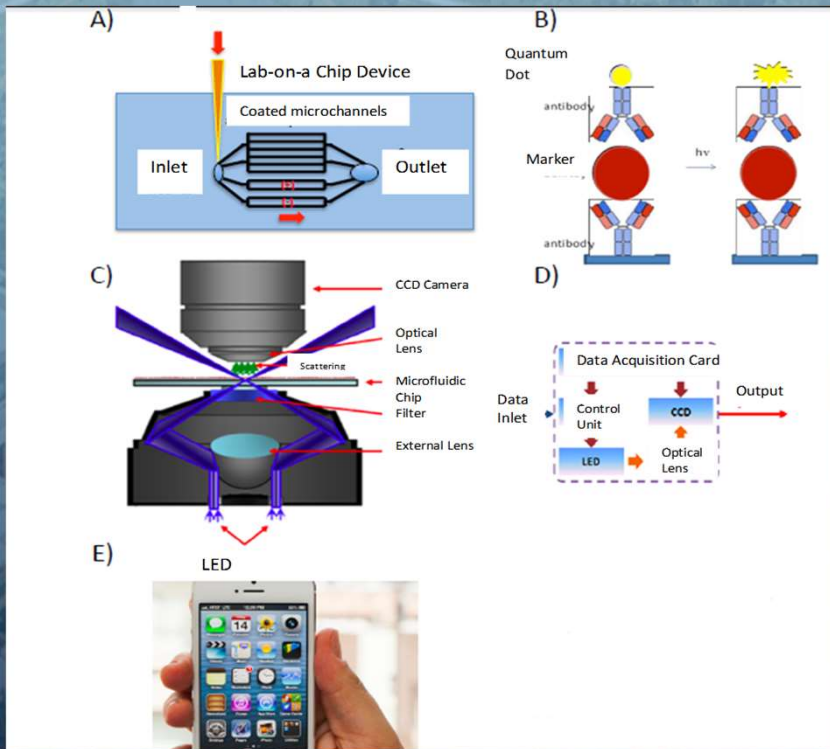
An aerial photograph of the Sabancı University campus, showing various academic buildings, green spaces, and a winding path. The image is overlaid with a semi-transparent blue filter.

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...

Center of Excellence for Functional SURfaces and interfaces for Nano diagnostics

Core Research Areas



- The topics involve 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.

Center of Excellence for Functional SURfaces and interfaces for Nano diagnostics: We are NOT

- a substitute and alternative of a center.
- building large facilities and infrastructure
- working for companies in solving their routine problems and allocating our resources for this purpose
- developing a commercial product
- building artificial collaborations and research groups
- wasting money and resources

Center of Excellence for Functional SURfaces and interfaces for Nano diagnostics (January 2021-December 2021)

Number of **68**
Journal articles
within 11 months
SU/SUNUM

Number of **60**
Journal articles in
Q1 journals
within 11 months

Number of **10**
Journal articles
in journals with IF>7
within 12 months

Number of **11**
Applied and Granted Patents
within 12 months

- Articles are only related to functional surfaces and interfaces.
- These outputs come from only SU/SUNUM researchers.
- Total outputs from all the members are higher.

Center of Excellence for Functional SURfaces and interfaces for Nano diagnostics

Some Center 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: Biphilic surfaces and Diagnosis based on Evaporation.
- The ongoing project budget is currently more than 2,000,000 Euro. The budget of pending project applications (under review) exceeds 4,000,000 Euro.

Recent Activities

- EFSUN organized The Functional Surfaces and Interfaces Best Paper Award Competition on the 19th August 2021 (<https://gazetesu.sabanciuniv.edu/toplum-ve-bilim/efsun-2021-en-iyi-makale-yarismasinin-kazananlari-belli-oldu>)
- The Summer Applied Nanotechnology School for High School Students will be held between 24 January and 4 February 2022 in cooperation with Sabancı University SUNUM and EFSUN Centers (<https://gazetesu.sabanciuniv.edu/online-lise-kis-okullari-icin-kayitlar-basladi>)

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Some Member Achievements:

- EFSUN Center Co-Director Ali Koşar received "μFIP Prominent Researcher Award" in the 2021 micro Flow and Interfacial Phenomena (μFIP) Conference due to his valuable contributions to the science and engineering in single phase and phase change fluid flow and engineering in micro heat sinks and microfluidic devices. (<https://gazetesu.sabanciuniv.edu/en/science-and-tech/ali-kosar-receives-ufip-prominent-researcher-award>)
- Abdolali Khalili Sadaghiani received the TÜBA (Turkish Academy of Sciences) TEKNOFEST Doctorate Science Award. (<https://gazetesu.sabanciuniv.edu/en/science-and-tech/abdolali-khalili-sadaghiani-received-tuba-teknofest-doctorate-science-award>).
- The article of Burç Mısırlıoğlu and Kürşat Şendur is featured on the cover of the world-famous Annalen der Physik Journal in its October issue. (<https://gazetesu.sabanciuniv.edu/en/science-and-tech/research-our-faculty-members-featured-cover-annalen-der-physik-journal>)
- The article of Morteza Ghorbani and Ali Koşar has been selected a feature article in the journal Nature Microsystems and Nanoengineering as well as in Phys.Org. (<https://phys.org/news/2021-06-cavitation-on-a-chip-device-multiple-microchannel-configuration.html>)

Center of Excellence for Functional SURfaces and interfaces for Nano diagnostics

Contributions to SU:

- EFSUN is a 'Research Powerhouse' at Sabanci University.
- EFSUN is a bridge among the Centers and contributes to the coordination activities.
- EFSUN provides valuable contributions to Schools for High School Students in providing understanding about the fields of Material Science and Nanotechnology.
- 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 critical mass in related research topics.
- EFSUN presents a very nice example for high impact interdisciplinary research in TURKEY.
- EFSUN is training new generation skilled students, scientists and engineers.

Acknowledgements

- CoE Members
- CoE Advisory Board Members
- Sabanci University Board of Trustees
- Sabanci University Presidents and Vice Presidents
- FENS Deans and Vice Deans, Deans Office Staff Members
- SUNUM Directors and Staff Members