

# NANOSENSORS BASED ON NANOMATERIALS

## Reporting

### Project Information

NANOBIOSENS

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FP7-PEOPLE

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Closed project

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Coordinated by  
MIDDLE EAST TECHNICAL  
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 Turkey

## Final Report Summary - NANOBIOSENS (NANOSENSORS BASED ON NANOMATERIALS)

NanoBioSens is a project that has brought together an international and interdisciplinary assembly of research teams in order to share the knowledge of the different elements involved in building nanobiosensors. The development of future devices will require the controlled assembly and placement of nano-building blocks into desired locations. Through accomplishing this task, the advantages of the integration of nano-materials into the structure of biosensors will become attainable.

“My expertise is in the field of nanomaterials, specifically zeolites and zeo-type materials, and their use in advanced applications, such as nanosensors and photovoltaics,” begins Kurc. “The aim of the project was to build nanodevices for actual applications through the controlled integration of nano-materials into specific parts of these devices, and so with my expertise alone this would not have been possible. That is why I decided to form an interdisciplinary group of partners, so that collaboratively we could achieve what none of us could have done by ourselves.”

The team Kurc has fashioned includes researchers from six different countries with expertise areas in the field of chemical engineering, biomedical engineering, materials science, physics, chemistry, and biology.

She gives some examples of how this diversity within the team, along with the additional value of her membership of the METU Central Laboratory, has been of the utmost importance to the success of the project.

“Our partner from the USA, Prof. Al Sacco Jr., who is a former astronaut and currently the Dean of Engineering at Texas Tech University, is an expert in the field of zeolite synthesis,” she explains. “Our research teams worked together making what nano-sensors needed for controlled optimization of transducers. Our partner from Korea, Prof. Kyung Byung Yoon of Sogang University, who is currently the Dean of the College of Natural Science, brought to the project his expertise on how to attach nano-materials onto surfaces. When nano-materials are synthesized, they are generally produced in a powderform which you cannot fix on to anything, and so in order to test their potential applications they have to be attached using specific substrates dependent on the material they are being attached to.

“On the other hand, we have our biosensor experts, Prof. Nicole JaffrezicRenault and Prof. Sergei Dzyadevych from France and the Ukraine, who have their own techniques for immobilising biological molecules in order to get different responses from different biological compounds. However, they lack the

experience of working with nanomaterials, and so through bringing these researchers together we have been able to get some great results.”

In terms of scientific accomplishments, the team has managed to create organized nano-patterns of zeolites on silicon wafers for the first time. This means that they are able to attach zeolite nanocrystals and attach them in very specific positions, which is an essential skill needed to begin using nano-materials in nano-devices.

## Related documents



[final1-p26-nanobiosens-pp54-56.pdf](#)

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