

# Net4Mobility<sup>+</sup>



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Network of the Marie Skłodowska-Curie Actions National Contact Points for the mobile scientific and innovation community

### Success Stories from MSC Fellows Hosted in Widening Countries

Task 4.4 Effective MSCA promotion

Issued by: Gabriella Tchouprenska and Antoaneta Mateeva,  
Bulgarian Academy of Sciences

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Name of the MSC Fellow: Bengisu YILMAZ

Nationality: Turkish

Host organization: Kaunas University of Technology

Country of the Host: Lithuania

Project Acronym: NDTonAIR, 722134

Project start and end date: 3 May 2017 – 3 May 2020

Type of MSC action, H2020: ITN

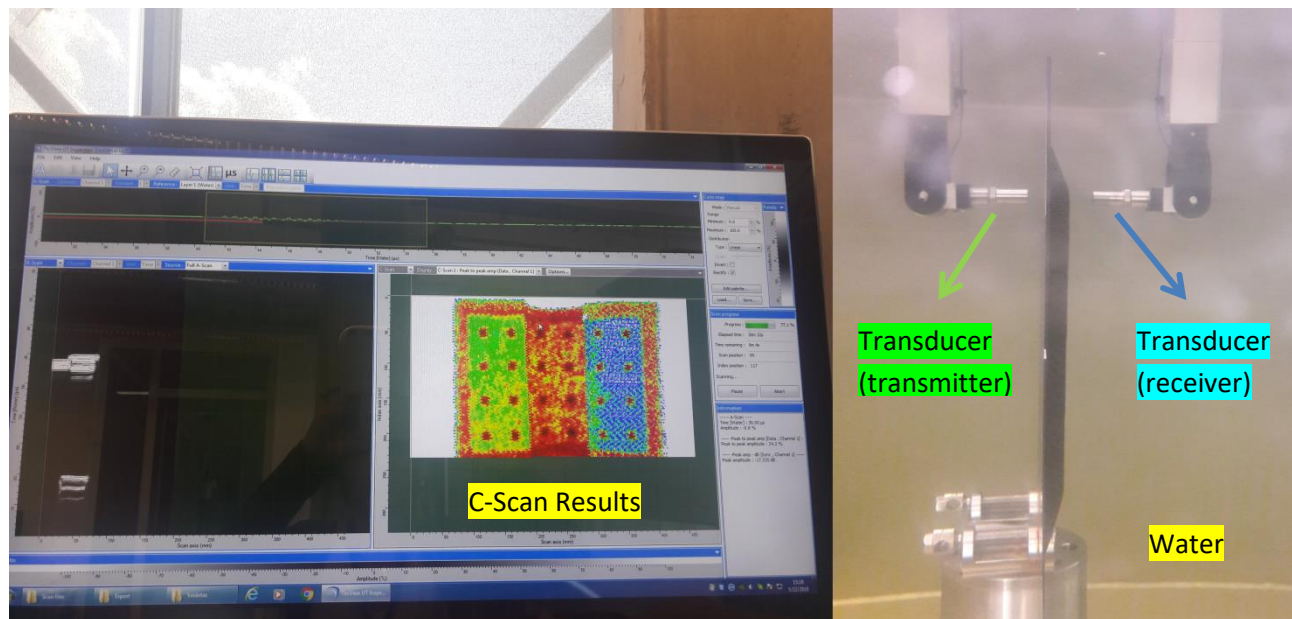


Figure 1 Immersion through transmission ultrasonic test example with benchmark composite sample with different size and place delaminations. Left hand side: Computer interface for the analysis with C-scan results. Right hand side: Sample with transducers (transmitter and receiver) under water.



Figure 2 Participation in European Conference on Non-Destructive Testing, June 2018. NDTonAIR MSCA fellows: from left to right: Khalid Rizwan, Sevilia Sunetchiieva, Tommasso Seresini, Bengisu Yilmaz, Michael Stamm, Sergey Gartsev.

### **Your story:**

#### **Project objectives and research field:**

The objective is to evaluate the bonding quality in adhesive joints with different nondestructive testing techniques such as ultrasonic, electromagnetic, and thermal. The information obtained will be integrated and fused. The aim is to compare different techniques based on probability of detection (POD) curves and image correlation. So, adhesive joints will be reliable for aircraft structures.

#### **Tell us why your topic is important and/ or how it brings to advancement in your research field:**

Nowadays in aerospace industry, the usage of adhesive bonding is only limited to secondary load carries even though they offer advantages on the weight of the structures, homogenous load distribution, and low corrosion effects compared to mechanical joints. The lack of capability of the non-destructive testing (NDT) of the adhesive bonds limits the reliability of joints which is compulsory in aerospace industry. Especially, weak and kissing bonds are undetectable via traditional NDT methods. The project aims to detect and evaluate the weak and kissing bonds via

comparison, integration and fusion of different NDT techniques. Also, the reliability of the advantageous joining technology will be guaranteed by statistical methods like POD. Therefore, the improved quantified evaluation of the bonding quality will allow adhesive joints to be used in aerospace industry.

### **What are the benefits of participating in a MSC action?**

To start with, I have learnt and I am still learning a lot about non-destructive testing such as ultrasonic inspection, thermography and electromagnetic inspection. Along with the experimental procedures, sensor design, material characterization methods, and signal processing techniques that I am working on, I have gained knowledge in numerical modeling of physical phenomenon. In addition to the technical knowledge that I have gained during the past year and a quarter, I am confident to say that my presentation and networking skills have improved. By the dissemination activities that I am involved, I have also interacted not only with professionals but also with public audience about my research.

### **Did you encounter any challenges during application/ implementation and did you get any help?**

The application process for the fellowship was direct and smooth. However the implementation, starting the job was not organized before I have arrived. First of all, I had to apply for a Schengen Visa before starting the position. However since the university was not experienced, at the beginning of the visa procedure it was not clear which type of visa I should apply for. Also, during the start of the project the question ‘Should I formally apply for the PhD position in school administration?’ was not clear. Also, regarding my ITN programme, trainings that I am attending was not transferred at the school on the credit system. In addition, the problems increased when I wanted to apply for replacements. Due to lack of experience at the university and the language barriers, the procedures were taking a lot time and effort. During these tough times, my advisor and the administration department in my institute were very helpful.

### **Why did you choose a widening country as a Host? What was the reason that convinced you? What is making you professionally happy here?**

The foreseen impact of the project and the research topics were overlapping with my research interest and that is why I have applied for the position. I did not separate my applications as ‘widening country’ or not. The reason that convinced me to do research in this university, specifically in the Ultrasound Research Institute, is that I have trusted their knowledge and reputation during almost hundred years. Also, the opportunities to travel and get training within the ITN network was very attractive compared to other research positions.



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**Would you recommend others to apply? What useful advice/ tips can you give them?**

I would recommend every curious researcher to apply for MSC actions not depending on the host country. I have seen and I am still observing that every country has its own culture and this is what makes mobility so colorful and enjoyable. There are advantages and disadvantages to select a widening country as a host, and the reasons may vary from person to person. My advice for those who would like to be a mobility researcher are to pack light, familiarize yourself with the culture (both similarities and differences), and enjoy the ride!