

**Sustainable Water Management  
Doctoral Programme (Water4All)**



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<b>Title of the PhD Project</b>	Innovative Groundwater Monitoring Technology Through Sensors
<b>Acronym</b>	INGMOS
<b>Research Fields of the Project</b>	Water Resources, Sensors
<b>Keywords</b>	Groundwater, hydrogeology, hydrology, sensors
<b>Host Institution, Department and Campus Location</b>	Izmir Institute of Technology, Department of International Water Resources Gülbahçe, Izmir, Türkiye
<b>PhD Awarding Institution and Graduate Programme</b>	Izmir Institute of Technology, Department of International Water Resources
<b>Name and Affiliation of Main Supervisor</b>	Prof. Dr. Alper BABA Izmir Institute of Technology,
<b>Name and Affiliation of Co-Supervisors</b>	Prof.Dr. Orhan GÜNDÜZ Izmir Institute of Technology
<b>Research Environment and Infrastructure</b>	The selected candidate will have access to the research infrastructure available at Izmir Institute of Technology and Middle Technical University. When a specific instrument or expertise is needed, all other national laboratories will also be contacted.
<b>Scientific Context of the Project</b>	For many countries, the main difficulty is monitoring groundwater levels and making predictions for water resource management on this basis. A cost-effective solution to the above problem can help local governments manage their water resources efficiently. The use of automatic sensors in environmental monitoring is increasing due to the rapid development of wireless communication and sensor technologies. Smart, affordable, tiny and powerful sensors that can measure a wide range of environmental guidelines have made continuous environmental monitoring and instant applications possible. The aim of this project is using different innovative groundwater monitoring technology through sensors.

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<b>Brief Workplan</b>	Evaluate different groundwater resources Monitoring technics Smart technics Using sensor for monitoring
<b>Innovative Aspects of the Project</b>	The rapid development of sensor and wireless communication technologies is very important for chemical and physical properties of water resources. A range of in situ sensors (e.g. electrical conductivity, pH, groundwater levels) are becoming increasingly available to track groundwater conditions associated with contaminant plume migration. Real-time data processing and transmission is also enabled by cloud computing, wireless networks and autonomous data acquisition systems. It is important to create a continuous real-time groundwater monitoring system by combining this in-situ data with machine learning. This system can reduce the frequency of sampling and serve as an early warning system. In this project we will use rapid development of sensor and wireless communication technologies in different basin in Mediterranean climate.
<b>Training Opportunities of the Project</b>	Numerous field studies related to the project  Visiting organizations working on this issue and examining what they do innovatively
<b>Interdisciplinary Aspects</b>	This project will be carried out with a fully interdisciplinary approach. The project will involve many contacts between climate scientists, civil engineers, hydrogeologists, geologists and environmental engineers.
<b>Intersectoral Mobility</b> <input checked="" type="checkbox"/> Short Visit <input type="checkbox"/> Secondment	State Hydraulic Works
<b>Intersectoral Mobility</b> <input checked="" type="checkbox"/> Short Visit <input type="checkbox"/> Secondment	Izmir Water and Sewerage Administration
<b>International Academic Secondment</b>	Villanova University



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Main Supervisor									
Brief CV	<p><b>Prof. Dr. Alper BABA</b></p> <p>E-mail: <a href="mailto:alperbaba@iyte.edu.tr">alperbaba@iyte.edu.tr</a></p> <p><b>Academic Degrees</b></p> <table><tbody><tr><td>Ph.D. Hydrogeology, Dokuz Eylül University, Türkiye</td><td>2000</td></tr><tr><td>M.Sc. Geological Engineering, Dokuz Eylül University, Türkiye</td><td>1995</td></tr><tr><td>B.Sc. Geological Engineering, Dokuz Eylül University, Türkiye</td><td>1992</td></tr></tbody></table> <p><b>Professional Networks</b></p> <p>Google Scholar: <a href="https://scholar.google.com.tr/citations?user=QVgCMkEAAAAJ&amp;hl=en">https://scholar.google.com.tr/citations?user=QVgCMkEAAAAJ&amp;hl=en</a></p> <p>ResearchGate: <a href="https://www.researchgate.net/profile/Alper-Baba">https://www.researchgate.net/profile/Alper-Baba</a></p> <p>Scopus: <a href="https://www.scopus.com/authid/detail.uri?authorId=7201982375">https://www.scopus.com/authid/detail.uri?authorId=7201982375</a></p> <p>ORCID: <a href="https://orcid.org/0000-0001-5307-3156">https://orcid.org/0000-0001-5307-3156</a></p>	Ph.D. Hydrogeology, Dokuz Eylül University, Türkiye	2000	M.Sc. Geological Engineering, Dokuz Eylül University, Türkiye	1995	B.Sc. Geological Engineering, Dokuz Eylül University, Türkiye	1992		
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Co-supervisor:									
Brief CV	<p><b>Prof. Dr. Orhan GÜNDÜZ</b></p> <p>E-mail: <a href="mailto:orhangunduz@iyte.edu.tr">orhangunduz@iyte.edu.tr</a></p> <p><b>Academic Degrees</b></p> <table><tbody><tr><td>Ph.D. Environmental Engineering, Georgia Institute of Technology, USA</td><td>2004</td></tr><tr><td>M.Sc. Civil Engineering, Georgia Institute of Technology, USA</td><td>2000</td></tr><tr><td>M.Sc. Environmental Engineering, Middle East Technical University, Türkiye</td><td>1997</td></tr><tr><td>B.Sc. Environmental Engineering, Middle East Technical University, Türkiye</td><td>1994</td></tr></tbody></table> <p><b>Professional Networks</b></p> <p>Google Scholar:</p>	Ph.D. Environmental Engineering, Georgia Institute of Technology, USA	2004	M.Sc. Civil Engineering, Georgia Institute of Technology, USA	2000	M.Sc. Environmental Engineering, Middle East Technical University, Türkiye	1997	B.Sc. Environmental Engineering, Middle East Technical University, Türkiye	1994
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