

# Cultural Heritage Cluster

**“Discovery of a 4500 years Hidden Corridor in the Great Pyramid using Non-destructive Techniques”**



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<b>Realization</b>	On-site Event
<b>Location</b>	DAAD Regional Office Cairo 11 El Saleh Ayoub St. Zamalek, Cairo, Egypt
<b>Date</b>	Sunday, 12 <sup>th</sup> November 2023 from 6.00 p.m. to 9.00 p.m. (Cairo Local Time)
<b>Guests</b>	Researchers and Scientists working in the engineering and cultural heritage field that are resident in Egypt
<b>Duration</b>	3 h
<b>Coordinator and Contact Person</b>	Nermine Abdelaty (abdelaty@daadcairo.org)
<b>Organiser</b>	DAAD Regional Office Cairo German Academic Exchange Service URL: <a href="http://www.daad.org">www.daad.org</a>

## Concept Note

Non-Destructive Testing (NDT) is a method known in many fields to discover the properties of a material, the components, the structure or the system without causing damage to the original part. It is being conducted in many fields, such as the medical field. Yet, in the cultural heritage field, it has a major added value.

In this event, the experts from Egypt and Germany will shed light on the successful cooperation and project “ScanPyramids” and give an overview of the key aspects of the discovery. The presentation will also address the role of modern non-destructive techniques in the discovery of ScanPyramids North Face Corridor in the Great Pyramid. In addition, measurements, methods, analysis and challenges will be presented as well.

The event is organised within the framework of the DAAD Regional Office Cairo project “Clusters of Scientific Innovation in the Middle East and North Africa” (COSIMENA), which aims to strengthen and initiate scientific cooperation and to make networks of researchers and universities between Germany and the MENA region visible. As a result, existing cooperation is made visible and potential synergies are initiated.

## Biography of the Speakers



**Prof. Dr Christian Grosse** is a Geophysicist by training and earned his Ph.D. in Civil Engineering at the University of Stuttgart followed by his Habilitation in Materials Testing. After affiliations in Karlsruhe, Stuttgart and Berkeley he returned to Stuttgart to become a Director at the Material Testing Institute. In 2010, he was offered the new Chair of Non-Destructive Testing at the Technical University of Munich. Since 2015, he has been working part-time for the company WTM Engineers in Munich where he is the scientific director of the division “Building Diagnostics”.

His research interests include the application and development of non-destructive testing methods as well as structural health monitoring. Applications range from civil engineering, engineering geology and geophysics to constructions in aeronautics and automotive, biomedical engineering and the preservation of heritage structures and artefacts.

He contributed to 480 publications including more than 50 books



**Prof. Dr Hany Helal** is currently a Professor of Rock Mechanics and Engineering Geology, at the Faculty of Engineering, Cairo University.

He is the coordinator of ScanPyramids Project since 2015 and the holder of UNESCO chair of “Science and Technology for Cultural Heritage” since June 2023. He was the Minister of Higher Education and State for Scientific Research 2005-2011.



**Dr Olga Popovych** is a Material Scientist by training and earned her Ph.D. in Instruments and methods of control and substance composition determination at the Ivano-Frankivsk National Technical University of Oil and Gas, Ukraine and after working in the Department of Technical Diagnostic and Energy Management as an Associated Professor. Since 2010 she has been working part-time in an NGO as a Project manager and has implemented 9 international EU programs in the educational field, a national research program, research grant from the President of Ukraine. After the Russian invasion, she moved to Munich and after the Fellowship, granted by the Institute of Advanced Studies (TUM), is working full-time in the position of PostDoc in the Chair of Non-Destructive Testing at the Technical University of Munich. She was responsible for the project ReKult “Resource-Optimised Memory Institutions’ and project coordinator from TUM “Improvement of Non-Destructive Testing Techniques in Archaeology and for the Preservation of our Cultural Heritage.

Her research interests include the application and development of non-destructive testing methods as well as structural health monitoring.



**Assist. Prof. Mohamed Elkarmoty** is specialized on Geological Engineering and Mining and is the Director of the Rock Engineering Laboratory at the Faculty of Engineering – Cairo University (2018-present). He is the Deputy Coordinator of “ScanPyramids” project since 2018 until today.

2009 he got his bachelor’s degree and in 2013 he obtained his master’s degree in mining engineering from Cairo University.

His Ph.D. focused on Mining Engineering, DICAM (2014-2018) University of Bologna.

He has 14 years of experience in co-teaching and teaching several mining and geo-engineering modules. He also published more than 30 research articles in international journals and conferences and participated in more than 30 engineering projects for mining, construction and archaeological restoration. He was awarded Cairo University Encouraging Award in Engineering Sciences (2022) and is the Co-Chairholder of the UNESCO Chair on Science and Technology for Culture Heritage at Cairo University.



**Thomas Schumacher, PhD, PE (DE)** is a Professor of Structural Engineering and the Associate Chair of Graduate Programs in the Department of Civil and Environmental Engineering at Portland State University, USA. His goal is to develop practical non-destructive evaluation (NDE) tools to support the engineering and preservation of existing civil structures. Schumacher is interested in ultrasonic stress wave and vibration-based methods, self-sensing structural composites, and video-based monitoring techniques. His most recent work includes multimodal imaging and image fusion of radar and ultrasonic array measurements to examine structures. He offers courses on structural analysis and design, vibrations and structural dynamics, matrix and computer methods for structural analysis, design of prestressed concrete structures, and NDE for Civil Engineers. Schumacher is a licensed professional engineer (PE) in the State of Delaware (DE) and currently serves as the Chair of the American Concrete Institute (ACI) Committee 444–Structural Health Monitoring.

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## Programme

**Sunday, November 12th, 2023, from 6.00 p.m. to 9.00 p.m. (Cairo Local Time)**

**5.30 p.m. – 6.00 p.m.**

### **Registration**

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#### **Greeting Words**

Dr Carsten-Michael Walbiner  
Director of the DAAD Regional Office Cairo

**6.00 p.m.- 6.15 p.m.**

Ms. Anke Reiffenstuel  
Director for Academic Relations, Education and Research Policy  
at the Foreign Office of the Federal Republic of Germany

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#### **Presentations “Discovery of a 4500 years Hidden Corridor in the Great Pyramid using Non-destructive Techniques”**

Prof. Dr Hany Helal  
Cairo University (Egypt)

**6.15 a.m. – 7.30 p.m.**

Prof. Dr Grosse  
Technical University of Munich (Germany)

Dr Olga Popovych  
Technical University of Munich (Germany)

Assist. Prof. Mohamed Elkarmoty  
Cairo University (Egypt)

Assoc. Prof. Thomas Schumacher  
Portland State University (USA)

**7.30 p.m. – 8.00 p.m.**

### **Q & A Session**

**8.00 p.m. – 9.00 p.m.**

### **Joint Networking Dinner**

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**End of Event**