



5th IWA INTERNATIONAL SYMPOSIUM ON WATER AND
WASTEWATER TECHNOLOGIES IN ANCIENT CIVILIZATIONS:
EVOLUTION OF TECHNOLOGIES FROM PREHISTORY TO MODERN
TIMES

September 11th to 13th, 2019
SYMPOSIUM PROGRAM
Dead Sea- Jordan

Tuesday – September 10, 2019

20:00 **Registration**

21:00 **Welcome: K. Shatanawi (Chair of the Organizing Committee)**

Wednesday – September 11, 2019

Opening Ceremony

09:00-09:30 **Welcoming remarks**

09:30-10:00 **Coffee break**

Session I (Session Chairs: A. N. Angelakis and K. Shatanawi)

Keynote speak

10:00-10:40 **Survey of Nabataean and Roman Water Technologies in Jordan**
Larry Mays (USA)

Session II (Session Chairs: M. Salgot and M. Shatanawi)

10:40-11:00 **Old water infrastructures in the Amadorio river basin**
M. Salgot (Spain) and M. Soler (Spain)

11:00-11:20 **Carbonate deposits in the Roman aqueducts of Jerash and Beziers-
witnesses of a problematic water supply**
C. Passchier (Germany), G. Sürmelihindi (Germany), and D. Boyer
(Australia)

11:20-11:40 **Introduction of the Archimedean screw pump to East Asia (China, Korea,
Japan) during the 17th and 18th century**
A. Koenig (China)

11:40-12:00 **Historic hydraulic works: paradigms of traditional good water
governance, integrity, and sustainability**
F. Megdiche-Kharrat (Tunisia), X. Y. Zheng (China), M. Moussa (Tunisia), Z.
Fa Min (China), and A. Angelakis (Greece)

12:00-12:20 **The Role of Water Culture in the Water Management: The Case of Red
River basin in Mid Valley, China**
X. Y. Zheng (China)

12:20-12:40 **A survey of Ancient water technologies in the Americas**
L. Mays (USA)

12:40-13:00 **Discussion**

13:00-14:00 **Lunch**

Session III (Session Chairs: A. Tamburrino and A. Al-Omari)

- 14:00-14:20 **The drainage of the Crater “La Crosa” in Spain**
E. Batista (Spain) and J. Hernandez (Spain)
- 14:20-14:40 **Petra Flood Management: Nabateans Practices versus Modern Tools**
R. Al-Weshah (Jordan), K. Shatanawi (Jordan), and H. Abu Hajar (Jordan)
- 14:40-15:00 **Water-powered machines and a water distribution system in Munster’s Cosmographia**
A. Tamburrino (Chile)
- 15:00-15:20 **History of floods in Greece: Causes and measures of for protection**
A. Angelakis (Greece), G. Antoniou (Greece), K. Voudouris (Greece), N. Kazakis (Greece), and N. Dalezios (Greece)
- 15:20-15:40 **Water resources management and urban planning**
dar – Diamond Sponsor
- 15:40-16:00 **Discussion**

16:00-16:20 Coffee break

Session IV (Session Chairs: X. Y. Zheng and H. Abu Hajar)

- 16:20-16:40 **Ancient Puquios of the Nasca Region in the Peruvian Desert**
L. Mays (USA)
- 16:40-17:00 **History of hygiene in the Hellenic world focusing on *Asclepieia* and crucial role of water**
A. Angelakis (Greece), C. Yapijakis (Greece), and G. Antoniou (Greece)
- 17:00-17:20 **History of water and life expectancy**
R. Rajala (Finland), A. Angelakis (Greece), P. Juuti (Finland), T. Katko (Finland), C. Nikolaidis (Greece), H. Vuorinen (Finland), and J. Y. Zhang (China)
- 17:20-17:40 **Small scale residential Ottoman hammams in Greece**
E. Kanetaki (Greece) and G. Antoniou (Greece)
- 17:40-18:00 **Discussion**

18:00-19:30 Meeting of the joint IWA/IWHA-SG on WAC

Thursday – September 12, 2019

Session V (Session Chairs: A. Koenig and K. Shatanawi)

Keynote speak

09:00-09:40 **Evolution of Water Reuse: Past, Present and Future**
A. N. Angelakis (Greece)

Session VI (Session Chairs: J. Margeta and H. Mohammad)

09:40-10:00 **Contribution of the renaissance in the development of water-lifting machines in the five hundredth anniversary of the death of Leonardo da Vinci**
R. Drusiani (Italy), L. Del Giacco (Italy), and A. Caprari (Italy)

10:00-10:20 **Long-term strategies of water services focusing on three modern cases**
T. Katko (Finland), A. Angelakis (Greece), P. Juuti (Finland) and R. Rajala (Finland)

10:20-10:40 **Evolution of urban waste- and storm- water management in the region of Crete**
A. Angelakis (Greece) and G. Tchobanoglous (USA)

10:40-11:00 **Discussion**

11:00-11:20 Coffee break

Session VII (Session Chairs: P. Juuti and R. Al-Weshah)

11:20-11:40 **The Restoration of the Roman water supply system in 1880 for the water supply for the city of Split**
J. Margeta (Croatia), and K. Marasovic (Croatia)

11:40-12:00 **The relation of the ancient water technology to the evolution of the modern hydraulic advancements**
I. Kalavrouziotis (Greece), and P. Koukoulakis (Greece)

12:00-12:20 **Legal pluralism and unofficial law: the evolution of water law in Lebanon through 4,000 years**
G. Gharios (UK)

12:20-12:40 **Doubled layered hydroxides adsorbents for improved water and wastewater treatment: from ancient tradition to recent nanocomposites advancements**
N. Mu'azu (Saudi Arabia), M. Essa (Saudi Arabia), and N. Jarrah (Jordan)

12:40-13:00 **Discussion**

13:00-14:00 Lunch

Session VIII (Session Chairs: I. Kalavrouzioties and M. Halalsheh)

14:00-14:20 **Evolution of Urban Water Treatment Focusing on Hellenic World**

A. Angelakis (Greece) and K. Voudouris (Greece)

14:20-14:40 **Tourism: The Falaj, Karez, and Puquio**

L. Mays (USA)

14:40-15:00 **Augmenting water sources via treated sewage effluent reuse: Adopted modern strategy for meeting freshwater demands in KSA and GCC countries**

N. Mu'azu (Saudi Arabia) and M. Essa (Saudi Arabia)

15:00-15:20 **Water Infrastructure in Trowulan, ancient capital city of Majapahit Kingdom**

A. Nurmiyanto (Indonesia)

15:20-15:40 **Discussion**

15:40-16:00 Coffee break

Session IX (Session Chair: S. Al-Farajat)

16:00-17:40 **Special session on the current activities in Petra**

Session X (Session Chairs: A. N. Angelakis , L. Mays, and K. Shatanawi)

17:40-18:00 **Closing remarks**

20:00-22:00 Gala dinner (participants)

Friday – September 13, 2019

Field trip to Petra

07:30-20:30 **Details are available on the symposium website**