

*Resilience of Urban Water Infrastructures in the Wake of  
Disruptions*

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**Abstract**

Urbanization and aging infrastructure pose increasing challenges to secure safe and reliable water supply to a continuously growing population. Integration of technology through sensing and actuation, resource recovery through graywater reuse and rainwater harvesting, and conservation through efficient appliances, policy and education, are emerging as the primary solutions towards resilient water systems. This talk will present an overview of the technological developments and approaches to support urban water systems management. A design approach of sensing strategies of a small subset of nodes that achieves a network-wide diagnostics of reliability failures is presented. The problem involves selecting the minimum number of sensors such that every pipe failure can be uniquely localized. The localization problem can be viewed as the minimum test cover problem. Results show that the minimum test cover approach for sensor placement performs well for both detection and localization of reliability failures. Future directions for pressure management strategies to reduce leakage and burst frequency in municipal water systems will be discussed.

**Biography**



Dr. Lina Sela is an Assistant Professor in the Department of Civil, Architectural and Environmental Engineering in UT Austin. Dr. Sela was a postdoctoral research associate in the Department of Civil and Environmental Engineering at MIT, where she was affiliated with Resilient Infrastructure Networks Lab and Singapore-MIT Alliance for Science and Technology. Dr. Sela completed her PhD and undergraduate studies at the in the Faculty of CEE, Technion, Israel. Her research interests are resilient water infrastructure networks, pressure management, and demand-side management.