

## Yanchen Liu

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### Biography

*Yanchen Liu* received BEng degree in School of Environment from the Tsinghua University in 2003, and Ph.D. degree from the School of Environment, Tsinghua University in 2008. He is currently a Associate professor in the School of Environment, Tsinghua University. He has published more than 20 SCI journal papers. His research interests cover mainly sewer monitoring, operation and control.

### **Presentation Title: The operation and control based on the sewer monitoring**

The inflow and infiltration, exfiltration and overflow are dynamic processes in the sewer. The status of a sewer may change from one to another status in a rainfall event. However, the methods mentioned above can't diagnose and identify the transition between status, which is important in early warning of the sewer system.

This study was conducted in a sewerage system in a city in southern China. Through constructing online wastewater quantity and quality monitoring systems, the variation characteristics of flow and water quality under different operating status of the sewerage system was investigated and a database was established. At last, a diagnosis method based on conventional index such as water level and conductivity was developed to evaluate the different sewerage status through the established database.

An online monitoring system was constructed and a data-driven diagnosis diagram was proposed. The conductivity was chosen as a sensitive index to support the diagnosis. The variation pattern of flow, level, conductivity wastewater was analysed. For the wet weather flow, the variation pattern of water indexes was different from that in dry weather flow. The water level will increase, and the conductivity will decrease because of inflow and infiltration. Based on the variation pattern of water indexes at different status such as blockage, inflow, overflow, the database corresponding to different operation status was constructed. At last a diagnosis diagram was proposed and successfully applied in a sewerage system.