

## Professors Mao and Yazici Receive Research Grant from New York State DOT

Civil Engineering professors Xinwei Mao and Anil Yazici received a research grant in fall 2018 from New York State Department of Transportation (NYSDOT) to conduct a 2-year study to investigate the best practices for the reduction, reuse, and recycling of vehicle wash water for NYSDOT vehicles.

Compliance with environmental regulations and cost efficiency are two important components of winter highway maintenance and operations. Departments of Transportation (DOTs) across the United States use various types of materials, chemicals and agents during snow operations. Besides the direct material costs, indirect costs, such as environmental, highway infrastructure and equipment depreciation are also incurred. In order to minimize the vehicle corrosion and extend the service life, winter maintenance equipment (e.g. plow trucks) need to be washed regularly, especially during the Snow & Ice (S&I) seasons. The vehicles need washing outside of S&I season as well to ensure that they avoid obscuring the vision of vehicle operators, remove the dirt or vegetation which might contaminate other loads or spread invasive plant species and also reflect the professionalism of the local DOT.



The overall goal of this study is to improve NYSDOT's environmental compliance efforts and cost efficiency in vehicle wash operations with a system-level life-cycle analysis. The project team will approach the challenges from two complementary perspectives: 1) Environmental chemistry and 2) Environmental and transportation economics. These two perspectives will supply the necessary operational and economic dimensions, so that the costs and benefits of potential improvements can be investigated in a holistic manner within a life-cycle assessment for implementation. To conduct cost-benefit analysis and compare different alternative vehicle wash water management approaches, seasonal wastewater quality from various vehicle washing methods will be evaluated in Dr. Mao's ELAP-certified analytical lab.

