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U.S. DOT highlights Lehigh research on use of corrosion-resistant steel in extending lifespan of bridges

Two research projects on the use of corrosion-resistant steel in bridge repair and maintenance led by [Dan M. Frangopol](#), Lehigh's inaugural Fazlur R. Khan Endowed Chair of Structural Engineering and Architecture, were recently featured in the January 2023 [UTC Spotlight newsletter](#) published by the U.S. Department of Transportation.

The team also includes recent Lehigh graduate [Xu Han '23 PhD](#) and [David Y. Yang](#), a former postdoctoral research associate in Lehigh's Advanced Technology for Large Structural Systems (ATLSS) Engineering Research Center who joined the Department of Civil and Environmental Engineering at Portland State University two years ago as an assistant professor. Lehigh is a consortium member of the Region 3 Center for Integrated Asset Management for Multi-Modal Transportation Infrastructure Systems (CIAMTIS) at Pennsylvania State University.

In the [most recent project](#), which looked at a transportation network in Chester County, PA, the researchers examined how the use of a locally sourced corrosion-resistant steel could reduce maintenance costs and extend the lifespan of carbon steel bridges. Although carbon steel bridges have a good material strength and are cost-effective to build, they are expensive to maintain, the researchers say, because the material is highly susceptible to corrosion.

That project builds upon the team's [previous work](#) that looked at the advantages of using the corrosion-resistant material versus carbon steel in girder replacement in the context of individual steel bridges.

The projects referenced are:

- Investigation of the Benefit of Using a Novel Corrosion Resistant Steel in New and Existing Steel Bridges in Pennsylvania ([Final Report](#))
- Efficient Service Life Extension of Bridges through Risk-based Life-cycle Management and High-performance Construction Materials: Emphasis on Corrosion-resistant Steel ([Final Report](#))

Frangopol is a world-renowned expert in the fields of bridge safety and maintenance management, structural systems reliability, and life-cycle civil engineering.

Read more about his research and achievements [here](#).

Related Links:

- U.S. DOT: UTC Spotlight, January 2023: "Locally Sourced Corrosion-Resistant Steel May Minimize Maintenance Costs and Extend..."
- Research website: [Dan M. Frangopol](#)
- LinkedIn: [Xu Han](#)
- Portland State University: [David Yang Research Group](#)
- Region 3 Center for Integrated Asset Management for Multi-Modal Transportation Infrastructure Systems (CIAMTIS)
- Lehigh University: [Advanced Technology for Large Structural Systems \(ATLSS\) Engineering Research Center](#)

Department/Program:

- Civil & Environmental Engineering
- College of Engineering
- Institute for Cyber Physical Infrastructure and Energy
- Institute for Data, Intelligent Systems, and Computation



Professor Dan M. Frangopol is the inaugural Fazlur R. Khan Endowed Chair of Structural Engineering and Architecture at Lehigh.



Xu Han recently graduated from Lehigh with a PhD in structural engineering.



David Y. Yang is an assistant professor of civil and environmental engineering at Portland State University and a former postdoctoral research associate in Lehigh's ATLSS Engineering Research Center.