New rebar coating to strengthen concrete structures

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Researchers at Missouri University of Science and Technology have developed a glass based coating for reinforcement bars that helps prevent corrosion and strengthens the bond between steel and concrete. This material could help engineers build stronger bridges and increase the longevity of other steel reinforced structures.

Currently, the US market for polymer coated and galvanized rebar in the construction industry is more than USD 4 billion per year. But research has shown that polymer coatings are not providing adequate corrosion protection for the rebar that helps to reinforce the nation's aging infrastructure.

The Missouri S&T coating is an engineered mixture of glass, clays and water. A slurry is applied to the rebar and heated to more than 1,400 degrees Fahrenheit. The coating, which adheres to steel, promotes bonding with concrete and works to prevent corrosion from water and salt.

Missouri S&T has filed for a patent on the technology, which was developed by a team of researchers led by Dr Richard Brow, Curators' Professor of materials science and engineering and Dr Genda Chen professor of civil, architectural and environmental engineering and interim director of the Center for Infrastructure Engineering Studies at S&T. The research was funded by the Leonard Wood Institute.

The Department of Defense has used related technology to develop blast resistant walls. Brow and Chen realized that some ideas originally conceived by the US Army Corps of Engineers could be built upon in order to engineer the glass ceramic coating for rebar.

Missouri S&T recently licensed the new technology to Pro-Perma Engineered Coatings in St Louis. Mr Keith Strassner director of technology transfer and economic development at Missouri S&T said that "The goal is to take innovations like this out of the laboratory, team up with partners, solve problems, and make an economic impact."