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The University of Manchester

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10 am, Tuesday, February 2nd 2021

J. Heyrovský Institute
Rudolf Brdička Lecture Hall

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Miniaturization of electrochemical energy storage and conversion is necessary for the development of increasingly more efficient, sustainable, and portable technologies. However, structural limitations in bulk materials make further shrinking of such ultrathin devices increasingly difficult and expensive to deliver. Two-dimensional (2D) materials offer a promising alternative, due to their electronic tuneability, sub-nanometer thickness, and enormous surface-to-volume ratio.

I will first highlight some of my achievements in this field and then outline a roadmap towards “*Tunable electrochemistry of two-dimensional semiconductors*”. This research program will exploit the extreme tunability of the electronic structure of 2D semiconductors through charge doping, substrate effects, and long-lived excitons, in order to achieve control over their electrochemical properties. My research will open up a new area of tunable electrochemistry, develop cutting-edge spectroelectrochemical characterization, and lead to highly efficient energy storage and conversion solutions in two dimensions.