Watching how a covalent polymer develops using a scanning tunneling microscope
5 April 2022, by Bob Yirka

A team of researchers from KU Leuven, the University of Aveiro, OLYMAT, the University of the Basque Country UPV/EHU and the Ikerbasque, Basque Foundation for Science has used a scanning tunneling microscope (STM) to observe the formation of a 2D covalent polymer. In their paper published in the journal *Nature*, the group describes how they captured images of the stages involved in polymer development and then used simulations to complement the progression.

The crystallization and polymerization process involved in the creation of polymers has been widely used to produce a variety of useful products, and the steps that are involved in such processes are well known. But until now, the process has not been directly observed. In this new effort, the researchers have found a way to observe the entire development process as a string of events.

A better understanding of the process, the researchers note, should lead to methods of reducing defects and perhaps to ways to create tailored orientations or even the development of heterostructures with sandwiching of different materials. Their work has also confirmed theories that have been developed to describe the parts of the process that were not yet fully understood.
