

Chemputation

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I will explain why 'Chemputation' is a universal approach to explore chemical reactivity, discovery of new reactions, and molecules, as well as program chemical synthesis that allows us to translate all procedures, manual or automatic, into an executable chemical programming language that can run the processes on a chemputer. This code is written in the world's first universal programming language for chemistry: χ DL (pronounced Chi-DL). This new approach maps into a universal programming language for chemistry that is accessible to ALL synthetic chemists and will work on ALL robotic systems (subject to suitable specification). We demonstrate that the process is universal, and by analogy with computation, we call systems capable of universally turning code into reliable chemistry and materials processes *Chemputation*, see Figure.

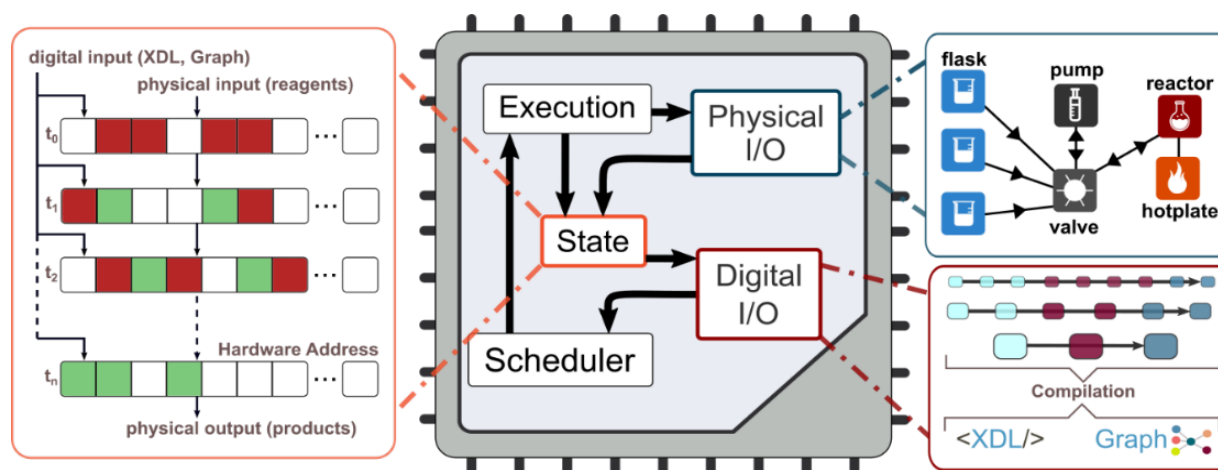


Figure: Depiction of a chemical state machine (CSM) for synthesis that is capable of Chemputation. The input is a combination of reagents, process information and hardware addresses. The CSM organizes the reagents and the processes by using a scheduler that then gets executed in the hardware as a function of the available state until the product is formed.

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