

**המעבדה לכימיה אורגנית ואי-אורגנית**

## **סמינר ספרותי**

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בנושא:

## **Automated Organic Synthesis and Flow Chemistry**

## Automated Organic Synthesis and Flow Chemistry

Flow chemistry has received considerable attention in the past decade as an emerging technology in organic synthesis. Practitioners in the field have demonstrated that moving from classical batch set-up to a continuous flow of reagents in specialized tubing reactors might considerably increase reaction efficiency. The manifold increase in the surface area to volume ratio allows excellent heat transfer and improved mixing, while the small dimensions of the system enable efficient electrochemical and photochemical reactions. In some cases, it was possible to utilize the technology for transformations that were considered impossible in batch chemistry, such as fast trapping of short-lived reaction intermediates. Connecting the flow instrumentation to computer controllers provides an opportunity to fully automate many organic synthesis protocols. It was shown that such systems can self-optimize reaction conditions, and execute multistep syntheses of pharmaceuticals and natural products without human intervention. This progress opens the door for extensive screening of chemical space and for computer-aided reaction discovery.

