UNIVERSITY OF MINNESOTA
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Nanobreadboards with nanomagnets for localized heating

A device and method for selective, localized heating of solder via magnetic nanowires for connecting nanodevices

IP Status: US Patent Issued; Patent number 12,300,591

Applications

- Nanoscale electronics
- Optoelectronics e.g. large-scale beam-forming
- Wireless communication- 5G/6G/7G
- Interconnects and microelectronic integration
- Memory chips

Technology Overview

Researchers at the University of Minnesota have developed an approach for scaling down micro-/nanoelectronic interconnects. This approach utilizes an alternating magnetic field applied to magnetic nanowires to reflow solder to connect electronic devices. Localized, selective heating is achieved, providing a path for further scaling device integration, particularly for nanodevices. This novel process is compatible with 3D chip arrays and stacked layers.

Phase of Development

TRL: 2-3
Preliminary results

Desired Partnerships

This technology is now available for:

- License
- Sponsored research
- Co-development

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Researchers

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