

Hanzhi Yin

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Research Interests:

Adaptive Infrared Materials, Bio-inspired Materials, Infrared Camouflage

Education:

University of California, Irvine **September 2023-Present**

- Ph.D. of Engineering in Manufacturing Engineering **Irvine, CA, USA**

Huazhong University of Science and Technology **September 2020-June 2023**

- Master of Engineering in Electronic Science and Technology **Wuhan, China**
- Cumulative Grade Point Average: 3.6/4

Beijing University of Chemical Technology **September 2016-June 2020**

- Bachelor of Engineering in Mechanical Engineering **Beijing, China**
- Cumulative Grade Point Average: 3.5/4.3
- Major Ranking: 14/169 (~top 10%)

Research Experience:

Kirigami-based Building Envelopes for Radiation Angular Regulation

We employ a kirigami envelope with a variable-angle thermal reflector to regulate the thermal radiation of the windows, and the flipping envelope can easily switch between heating and cooling modes by pre-stress.

Transparent Hybrid Low-E Metamaterial for Radiative Heating

Integrating mid-infrared transparent polymers with nano-metal networks to form flexible, free-standing low-emissivity metamaterials. The transparent hybrid infrared blocking layer can improve conventional glazing thermal performance as a post-process.

Multi-wavelength Camouflage in Composite Textile

A low-cost, flexible, and passive textile that can achieve dynamic infrared and visible camouflage capabilities was developed. In the visible wavelength, it achieves 3 kinds of color system reversible change and in the infrared wavelength, the surface emissivity of the textile ranges from 0.32 to 0.94.

Publications:

1. Switchable Kirigami Structures as Window Envelopes for Energy-Efficient Buildings,

Hanzhi Yin, Xishu Zhou, Zhengui Zhou, Rong Liu, Xiwei Mo, Zewen Chen, Erqi Yang, Zhen Huang, Hao Li, Hao Wu, Jun Zhou, Yi Long, Bin Hu. *Research*, 2023, 6, 0103.

2. Synergistic modulation of solar and thermal radiation in dynamic energy-efficient windows. Zhengui Zhou*, Yunsheng Fang*, Xin Wang, Erqi Yang, Rong Liu, Xishu Zhou, Zhen Huang, **Hanzhi Yin**, et al., *Nano Energy*, 2022, 93, 106865.

Relevant Skills:

Experiment skills

Device fabrication: Microstructural patterned design, Laser micromachine, Metal nanowire synthesis, Electrostatic spinning, Spin-coating, Blade-coating, Spray-coating, Magnetron sputtering.

Materials characterization: UV/Vis Spectroscopy, IR Spectroscopy, Thickness, Sheet Resistance, Contact Angle, Morphology characterization (SEM).

Soft skills

Origin, Microsoft Office, 3D Max, PTC Creo, Solidworks, Adams, Energy Plus, Sketch Up, WINDOW, KeyShot, Photoshop, Adobe Illustrator, Auto CAD, MATLAB, Visual Basic, Endnote.

Awards and Honors:

- Academic Scholarship of HUST 2020, 2021&2022
- Merit student of HUST 2021
- Outstanding Student in BUCT 2019
- First-class Scholarship of BUCT 2017, 2018
- Jinming Outstanding Student Scholarship 2017
- Third-prize in National English Competition for College Students 2017