

ZHENGWEI CHEN

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EDUCATION

Purdue University, United State
PhD student of Mechanical Engineering

January 2022 - present

Purdue University, United State
Master of Mechanical Engineering

August 2020 - August 2021

Shanghai Jiaotong University, China
Bachelor of Mechanical Engineering

September 2016 - July 2020

RESEARCH

Probe traverse system for supersonic wind tunnel 2020

Director: Guillermo Paniagua.

Design a traverse system moves probes when wind tunnel is operating while ensuring tiny air leakage. It was selected as the finalists of Malott Innovation Award among 49 senior design groups and won the **Best Engineering Prize**.

Design of a Monte Carlo transient phonon transport solver 2022.1 -2022.7

Director: Xiulin Ruan.

Build up a solver to simulate the heat transport at nanoscales in semiconductors using C++. The Boltzmann transport equation (BTE), which describes the motion and interaction of phonons within the crystal lattice, has been simulated using a Monte Carlo technique. Longitudinal and transverse acoustic branches are taken into account. The BTE collisional term involving phonon scattering processes is simulated with the relaxation times approximation theory. The simulation code has been tested with silicon thin films.

Optically induced electro-thermal microfluidic tweezers in bio-relevant media 2022.1 - present

Director: Steve Wereley.

Rapid electrokinetic patterning (REP) has proven to be a powerful microfluidic tweezer that generates spatially and temporally specified microflow via electrothermal vortices. The ultra-small trapping forces on the scale of femtoNewtons exerted by REP, due to its viscous drag of the vortical flow on the trapped particles, attracts many potential bio-manipulation applications. We present, for the first time, use of isotonic sugar-based media to simulate bio-relevant environment for flow manipulation through REP. We also show that manipulation of murine pancreatic cancer cells is possible when suspended in a sugar-based isotonic medium.

WORKING EXPERIENCE

Thermal Engineer, Hirain, Beijing (2021.06-2021.12)

Design and simulate the thermal management system for electric vehicle battery pack. Design and modify the cooling plate and tube system using CATIA. Massive 3-D transient CFD simulation of battery package using advanced simulation technique (i.e. Reduced Order Model and ECM Battery model).

Thermal design of a retractable radar integrated case for **Lotus Eletre**. It is the first vehicle use retractable radar integrated case in the world.

TECHNICAL STRENGTHS

CAD	Siemens NX, CATIA (expertise in pipeline specially), SolidWorks
CFD	Ansys (Fluent; Mechanical; Discovery; SCDM), COMSOL, OpenFOAM
Programming	C, MATLAB, Python

ACADEMIC ACHIEVEMENTS

Malott Innovation Award 2020: Best Engineering Prize

Dean's List Semester Honors for outstanding scholastic performance 2019&2020 (with GPA 3.96)