

Six Funded Ph.D. Student Positions in the SBS Lab

The [Sustainable Building and Societies Laboratory](#) (SBS Lab) at the University of Colorado Boulder currently has six fully-funded Ph.D. positions in multi-scale modeling and optimization for the design and operation of smart, sustainable and resilient cities starting in the Spring/Summer/Fall 2021.

The research topics include 1) Explore multi-scale modeling technique for [future smart and connected cities](#) using the equation-based Modelica language and building upon our open source [Smart and Connected Community \(SCC\) Modelica library](#) and apply it to the communities in Colorado; 2) Develop and perform field test of advanced control strategies for [grid-interactive resilient communities](#) expanding upon our open source [Net Zero Energy Community \(NZEC\) Modelica library](#) based on a real-world net zero energy community in Florida; 3) Create open source Modelica models for the [optimal design of grid-interactive efficient district energy system](#); 4) Investigate holistic building system modeling and control methods based on our open source [end-to-end data center cooling system modeling and optimization package](#); 5) Invent smart sensor networks and machine learning methods to [modernize cities via smart garden alleys with application in Indonesia](#).

Requirements

In addition to the requirements (English, GPA, etc.) by our graduate school, we expect the following qualifications from our applicants:

- strong interests in computer modeling and simulation
- solid background in Engineering, Mathematics, Physics, Computer Science
- research experience with tangible outcome (e.g. publications)
- willing and be able to learn new knowledge quickly
- work independently in a team environment
- good English verbal and written communication skills
- programming experience (e.g. C/C++, Modelica, Matlab, Python)
- previous research experience in modeling and simulation is preferred, but not required

How to Apply

Students can apply to **The Department of Civil, Environmental and Architectural Engineering (CEAE)** or **The Department of Mechanical Engineering (ME)**. Detailed guidance is available at our lab website <https://www.colorado.edu/lab/sbs/openings>

About Us

The SBS Lab focuses on developing cutting edge modeling and simulation technology and applying them for the design, operation and optimization of sustainable, smart, and resilient buildings, communities and cities. We currently have nine Ph.D. students. We are one of the major contributors to the [Modelica Buildings Library](#). Our research is funded by the National Science Foundation, U.S. Department of Energy, U.S. Department of Defense, U.S. Department of Homeland Security, and ASHRAE. We have joint research with cities (e.g. Boulder, Miami, Miami Beach), universities (e.g. Virginia Tech, UT Austin, RPI, and University of Miami), US Department of Energy's national laboratories (e.g. Lawrence Berkley National Lab, National Renewable Energy Lab, Oak Ridge National Lab, Pacific Northwest National Lab, Lawrence Livermore National Lab), and companies (e.g. Schneider Electric and Amzur Technologies). For more information, please visit our website: <https://www.colorado.edu/lab/sbs/>.

Located at the foothill of Rocky Mountain National Park and with 300 sunny days a year, City of Boulder is named ["#1 in Best Places to Live in the US"](#) by US News in 2020. It is also named "The Happiest City" and "The Healthiest City" by National Geographic.

Contact Information

Dr. Wangda Zuo. Email: Wangda.Zuo@colorado.edu

