

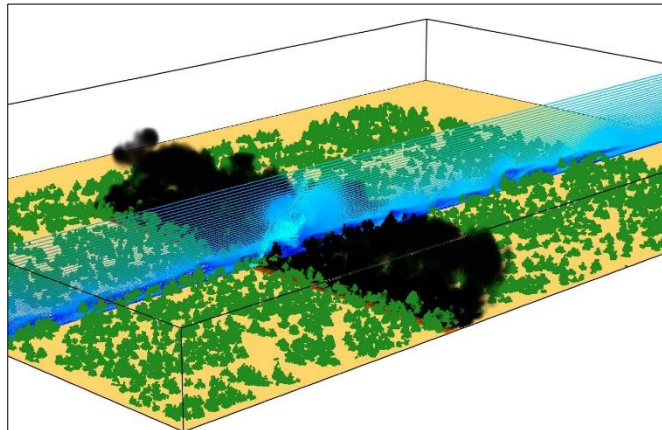
## PhD Opportunity in Fire Engineering

Applications are invited for a fully funded three-year PhD scholarship in computational fluid dynamics simulation of wildfires, to work under the supervision of Dr Andres Valencia (UC Senior Supervisor), Dr Greg Baker (Fire Research Group Limited), Dr Tara Strand and Mr Grant Pearce of Scion, and Professor Daniel Nilsson and Dr Marwan Katurji of UC. The scholarship is co-funded by Fire Research Group Limited and the University of Canterbury.

### Description

Large and severe wildfires have increased in occurrence, duration and intensity the last decade. Recent mega-fires in Australia, United States and Brazil provide evidence of this natural hazard. One particular high-risk wildfire scenario involves communities settled in Wildland-Urban Interface (WUI), where protocols designed for suppression of rural wildfires need to be coordinated with urban operations such as evacuation of neighbourhoods, as experienced during the 2017 Christchurch – Port Hill wildfires. While this tendency is expected to continue due to climate change, new techniques of fire management and deep understanding of wildfire behaviour are essential to face larger and more intense wildfire seasons closer to urban settlements.

In this project, an advanced computational model for predicting fire spread rates (WFDS or Wildland-Urban Interface Fire Dynamics Simulator) will be calibrated, validated, and demonstrated for a WUI New Zealand high-risk scenario. Data collected during Rakaia full-scale experiment campaign, including simultaneous fire spread rate and atmospheric conditions measurements, will be used for validation and calibration purposes. Emphasis will be placed on characterizing vegetation flammability through experiments in the UC Fire laboratory, and on extracting fuel spatial distribution from 3D laser scanning data. Demonstration of the model will include high-fidelity simulations of WUI atmospheric conditions and its coupling with the fire spread model.



### Scholarship

Provided by: University of Canterbury–Fire Research Group Limited Connect Doctoral Scholarship  
Amount: \$32,000 per annum + domestic tuition fees (New Zealand Dollars).

**Closing date:** 7 December 2021.

**To apply, please contact Dr. Andres Valencia:** [andres.valencia@canterbury.ac.nz](mailto:andres.valencia@canterbury.ac.nz)