PhD Scholarship in Hydrogen Spark Ignition Engines

Did you hear news about Toyota’s Corolla hydrogen-engined racecar? What would you say at the UNSW Engine Research Laboratory, we have a prototype hydrogen engine with endoscopic optical access, which can show the hydrogen-air mixture formation and surrounding flow/turbulence? We are looking for a PhD student who will perform optical diagnostic research of hydrogen engines using this newly developed method for three years, through which your engineering skills and project management capability will be fully developed.

We need cars with no or minimal carbon emissions. Are Tesla cars carbon free? Yes, but only in the tailpipe. Can they charge in a couple of minutes and travel 1000 km in one charge? Therefore, the hydrogen fueled cars are considered an excellent alternative. The missing puzzle for accelerated commercialisation of hydrogen-engined cars is NOx: oxides of nitrogen emissions, which is a strictly regulated air pollutant. UNSW’s optical diagnostics will find the best way to make hydrogen mixtures as lean as possible and as homogenous as possible. Upon the completion of PhD study, you will become a world leading researcher in hydrogen engines with ample lots of engineering skill sets and extensive research networks – these are critical for you to grow as a leading research engineer or engineering consultant. How do I know? I have supervised 17 PhD/MPhil graduates like that.

This project is performed in collaboration with Hyundai Motor Company, Namyang Global R&D Center, and Korea Institute of Machinery and Materials, and involves multiple visiting experiments to Korea. For your full commitment and expected excellent performance, you will be offered a top-up scholarship up to the maximum full-time rate of $45,076 as of 2022.

If you would like to know more about this project, please email Professor Shawn Kook (s.kook@unsw.edu.au). Please also visit the research website (or internet search “unsw engines”): https://research.unsw.edu.au/projects/engine