

# POLYU Junior Researcher Mentoring Programme 2024



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| <b>Code:</b>                                      | JRMP2024_07   |
| <b>School / Department:</b>                       | Department of Mechanical Engineering  |
| <b>Name of Research Team Member(s):</b>           | Dr An Liang, Associate Professor<br>Dr Shi Xingyi, Postdoctoral Fellow<br>Mr Liu Yun, Research Student  |
| <b>Research Topic:</b>                            | Design and development of a fuel cell powered toy car   |
| <b>Short Description of the Research Project:</b> | <p>A growing number of portable consumer electronics demand small, lightweight power sources with high power density and energy capacity. Despite advancements in battery technology, the state-of-the-art lithium-ion battery struggles to keep pace with these growing power and energy demands. Fuel cells can directly convert the chemical energy stored in various fuels into electricity. With their unique features of high energy density and energy efficiency, safety, low cost and instant recharging, fuel cells have the potential to satisfy these high energy requirements. This project will develop a passive fuel cell stack running on supplies of liquid fuel and air achieved only by natural convection, diffusion and gravity. The fuel cell stack offers many advantages, including high efficiency, low cost, simplicity and rapid recharging.</p> <p>This project will proceed in three stages:<br/> (1) design and fabrication of fuel cell components;<br/> (2) system integration and performance evaluation; and<br/> (3) demonstration of the stack to power a toy car.</p> |
| <b>No. of Places Offered:</b>                     | 9   |
| <b>Frequency of Meetings:</b>                     | Bi-weekly   |
| <b>Special Requirement(s):</b>                    | N/A   |

\* The information presented above is subject to change.