



Joint PhD Project Description

The description for the Joint PhD program will be posted online as a sub-page to

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Date Posted	1 July 2024	
Home University	Nanyang Technological University	
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Project Title	Development of Transparent Thermal Energy Harvesting Systems for Smart Windows	
Project Description (200-300 words)	<p>We are seeking passionate and innovative PhD candidates to join our groundbreaking project aimed at revolutionizing energy efficiency in buildings through the development of transparent thermal energy harvesting systems. This research focuses on harnessing infrared (IR) radiation from sunlight to generate electricity, providing a novel solution for smart windows in modern architecture.</p> <p>The core objective of this project is to design and implement advanced nanomaterials capable of absorbing IR radiation while allowing visible light to pass through, thus maintaining the transparency of conventional windows. These nanomaterials will be integrated into an electrochemical system to efficiently harvest low-grade heat and convert it into electrical energy. By selectively targeting IR radiation, a substantial component of solar energy that is typically wasted, this system promises to enhance the energy efficiency of buildings without compromising aesthetic or functional qualities.</p> <p>The project will investigate the synthesis and characterization of these innovative nanomaterials, focusing on their optical properties and ability to convert absorbed IR radiation into electrical energy through electrochemical processes. The successful integration of these materials into smart windows will reduce reliance on external power sources and lower</p>	



	<p>overall energy consumption in buildings. Additionally, this system offers potential applications in various fields, including automotive and electronic devices, where transparency and energy efficiency are crucial.</p> <p>This is a joint PhD program between Nanyang Technological University (NTU) and École Polytechnique, offering a unique opportunity to work in a collaborative international research environment. Candidates will gain expertise in nanomaterial synthesis, electrochemical systems, and energy conversion processes. They will have access to state-of-the-art facilities and resources at both institutions, contributing to publications in high-impact scientific journals.</p>
Program/Center Website(s)	NA
Additional Information (e.g., files with project details)	Tentative training plan.pdf