

Project Title	Fine Tuning a Novel Haemostatic Bandage for Commercialization
Supervisor	Dr Choon Hwai Yap
Theme(s)	Medical Devices
Project Type	Lab based
Project Description	<p>During serious wounds, such as automobile accidents, battlefield wounds, terrorist knife wounds, blood loss is the number one reason for death. The next most important cause of death is infection.</p> <p>We recently discovered a new nano-fibrous material that can be an excellent haemostatic material to address these two factors. This material is superhydrophobic, and has extremely repellence of fluids such as blood, so that it can repel blood fluid and prevent it from leaking or seeping out of the wound.</p> <p>Secondly, it causes fast clotting to seal the wound even without soaking up the blood. Thirdly, after clotting, it peels off with extremely small forces. We can remove the haemostatic bandage without re-tearing the wound again and causing infection.</p> <p>Finally, the material's surface structures prevent bacteria attachment to it. This combination of excellent qualities makes the material very suitable for commercialization as a haemostatic medical device.</p> <p>This material is patented and published in a good journal: https://doi.org/10.1038/s41467-019-13512-8.</p> <p>We now need to perform further tests to optimize the material design, and collect more data for clotting effectiveness, as well as understand the mechanism of clotting better.</p> <p>The work entails designing the physical form of the haemostatic device, fabricate the material with various composition concentrations and testing with human blood to determine clotting effectiveness, and performing assays to understand the clotting pathways. The candidate will collaborate with haematology and critical medicine experts, as well as commercialization champions.</p>