

## Thesis Project Offer

Joint Research and Education Programme "Palestinian-German Science Bridge PGSB"  
Forschungszentrum Jülich GmbH & Palestine Academy for Science and Technology

### Thesis type\*

<input type="checkbox"/> BSc	<input type="checkbox"/> MSc	<input checked="" type="checkbox"/> PhD	Intended starting date (approx.): 1.11.2020
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### Project description\*

Tungsten is currently the main candidate for the plasma-facing component in fusion reactors. However, there are concerns about the applicability, due to its inherent brittleness. For this reason a fibre-reinforced composite (Wf/W), produced by chemical vapor deposition (CVD) or powder metallurgy (PM) has been developed. This project focuses on the material based on the CVD process. Previous studies already demonstrated the pseudo-ductile behaviour of the composite material.

In order to build full components, the production process of Wf/W has to be optimized with respect to developing an industrially viable process. The next steps towards fabrication of significantly thicker and larger material samples have been taken in previous work and need now to be exploited.

In this project the engineering aspects of large scale Wf/W materials samples in terms of material production, and characterisation shall be the main focus. Optimizing the production of the fibre preform production but also the coating process, followed by mechanical characterisation and production of first full-fledged fusion relevant components.

Date*	Signature*
08.04.2020	Jan W. Coenen

\* required field