Masterstudents! We have a new project...

**Novel electron contacts for silicon solar cells by atomic layer deposition**

In case you are an enthusiastic student in applied physics or chemistry who is interested in solar cells, this might be of great interest for you. We, Jimmy Melskens (Postdoc) and Bas van de Loo (PhD student) are looking for a M.Sc. student who would like to collaborate with us in doing state-of-the-art research.

About 90% of the commercially available solar cells today are based on crystalline silicon (c-Si) as absorber material. A very hot topic in the field of c-Si solar cells is the replacement of the doped Si regions by so-called *passivating contacts*. Such an approach recently lead to a world-record efficiency of 25.6% for c-Si solar cells. In our group, plasma and materials processing (PMP), we are developing *transparent* selective contacts by atomic layer deposition (ALD) to extract electrons from the c-Si. In fact, the first results obtained with titanium dioxide (TiO₂) are already very promising. When fully developed, the process is of high interest to our industrial partners, as it can be scaled up relatively quickly. As a master student you can prepare TiO₂ (and other promising materials) with us, characterise the solar cells and participate in the meetings with our projects partners.

For any questions you can contact us directly or via our group leader, Prof. Erwin Kessels. If you are interested, we are happy to explain you more about this project.

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*Left; Schematic representation of a silicon solar cell where ALD TiO₂ is used at the front side as transparent selective electron contact. Right; Scanning electron microscopy image of the front surface, consisting of randomly oriented pyramids to increase the light trapping in the Si absorber. A 70 nm thick layer of In₂O₃, deposited by ALD, functions as anti-reflection coating and transparent conductor.*