



# Photorealistic Rendering of Goniochromatism in Coloured Photovoltaic Modules

Goniochromatic materials change colour depending on the viewing angle or illumination direction. This effect is also known as iridescence and can be perceived in soap bubbles and oil puddles, for example.

Colour coating to improve the appearance of photovoltaic cells also exhibits goniochromatism. You can note this effect on the windows of the Applied Science building at TU Delft. By tuning the thickness and texture morphology of the coating it is also possible to maximize the energetic efficiency while taking into consideration aesthetic integration. To achieve a balance between these two aspects, it is important to reproduce this effect in a virtual scenario to help architectures and urban designers in previewing what their installation in a specific environment will look like.

## Assignment

The goal for this master thesis is to develop photorealistic rendering methods that consider such phenomena using precise captured data and optical models developed by the Photovoltaic Materials and Devices group at TU Delft. The results will then be compared to photographs and test samples for validation.

## Requirements

C++, some knowledge in Rendering methods (ray-tracing) can be an advantage.

## Contact

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