SESSION 1.3 ADVANCED MATERIALS FOR PHOTOVOLTAIC APPLICATIONS

Invited speech – SILICON NANOWIRES OBTAINED BY PLASMA BASED CVD FOR APPLICATION IN SOLAR CELLS

Abundance, stability and non-toxicity are the silicon properties which have undoubtedly made it the leading actor in solar cells market in the last decades. The roadmap forecasts this will last for other years to come, but demands a product cost cut and an efficiency increment. To do so silicon nanowires have been proposed as the cell emitter active layer thanks to their optical properties, like the blue shift and the intensity increase in the photoluminescence signals, expected when their mean diameter is less than the free exciton size (5 nm) in the bulk silicon. The talk will discuss the common methods to fabricate these types of nanostructures focusing on chemical vapor deposition, one of the most controlled methods in terms of synthesis parameters and final morphological results. It will also discuss the issues related to their synthesis when the goal of obtaining sizes below 5 nm is targeted.

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