Chapter 1

Fig. 1: Gap between theoretical and best research cell efficiencies along with the performance of commercially available modules for different solar cell technologies. The graph clearly indicates the headroom available to improve the performance of III-V based solar cells (CPV-3J) [2]. Used under fair use, 2015.

Draft 09/01/2009

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Fig. 2 The evolution of various solar cell technologies over the last 40 years [1]. Used under fair use, 2015.

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**Fig. 3** The evolution of the PV system cost with component costs breakdown. The SunShot targets and beyond SunShot milestone are also indicated in the graph [5]. Used under fair use, 2015.

Ref. [8]--

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**Fig. 4** Progress of III-V solar cell technology in the last 6 years [1, 3, 7-10].

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Fig. 4 Progress of III-V solar cell technology in the last 6 years [1, 3, 7-10].

Ref. [10] --

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Description of item under review for fair use: From: Building on 35 Years of Progress – The Next 10 Years of Photovoltaic Research at NREL, US DOE by Dr. Gregory M. Wilson, 2013.


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Chapter 3

Fig. 2 Comparison between three thermodynamic growth modes [3]. Used under fair use, 2015.

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**Fig. 5** The motivation for growing initial GaAs layer at low temperature. Left: dislocations and other structural defects are introduced before the islands coalesce. Right: MDs are introduced into a continuous pseudomorphic film [22].

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