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.

Factor 4

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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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(Questions? Concerns? Contact Gail McMillan, Director of the Digital Library and Archives at Virginia Tech's University Libraries: gailmac@vt.edu)

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Name: Nikhil Jain

Description of item under review for fair use: National Renewable Energy Laboratory Website - http://www.nrel.gov/ncpv/.

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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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Fig. 5 Performance dependence of multijunction solar cells with increasing number of junctions, indicating efficiencies exceeding 50% should be achievable using four junctions [**11**]. Used under fair use, 2015.

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Chapter 3

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

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Name: Nikhil Jain

Description of item under review for fair use: From: University of Utah, Kinetics of Epitaxial Growth: Surface Diffusion and Nucleation, Lecture 30.

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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**].

Draft 09/01/2009

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Name: Nikhil Jain

Description of item under review for fair use: Y. B. Bolkhovityanov and O. P. Pchelyakov, "GaAs epitaxy on Si substrates: modern status of research and engineering," Physics-Uspekhi, vol. 51, p. 437, 2008.

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