

Figure 8.15 Calculated values of reflectance, Si absorbance, and metal absorbance for two cells, 5 μm and 15 μm thick, showing mechanisms of the enhanced absorption. The cells have front-polished and back-textured configuration. Texture height was 1.0 μm

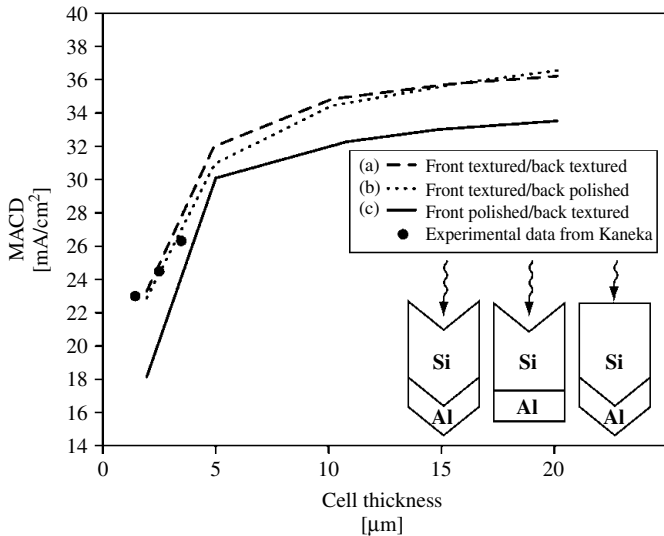


Figure 8.16 Calculated maximum photocurrent generated in a cell with light-trapping involving a metal reflector

the film thickness has reached about 10 μm. Furthermore, texturing at both interfaces appears to be the most suitable cell configuration. Figure 8.16 includes experimental data from Kaneka [45, 46]; the solid points show excellent agreement with calculated results. One can deduce the effect of light-trapping by comparing J_{SC} values in Figures 8.1 and 8.3 for the same thickness of the cell. In Figure 8.1, the thickness required to generate a J_{SC} of 34 mA/cm² is 80 μm. However, the structures of Figure 8.16 can produce the same values of J_{SC} for a thickness of about 10 μm – a factor of 8 thinner.