



Figure 7.13 Mc-Si surface after RIE. (Reprinted from *Solar Energy Materials and Solar Cells*, 74, Szulfcik J, Duerinckx F, Horzel J, Van Kerschaver E, Dekkers H, De Wolf S, Choulat P, Allebe C and Nijs J, “High-efficiency low-cost integral screen-printing multicrystalline silicon solar cells”, 155–164, (2002), with permission from Elsevier Science)

low process throughput. Alternatives to the use of toxic and corrosive Cl_2 are also being investigated [114].

7.6.3.4 AR coating and encapsulation

It has to be taken into account that cell reflection properties differ from those of texturing because it is usually complemented by AR coating (typically, by atmospheric pressure CVD deposition of TiO_2 or $\text{TiO}_2/\text{SnO}_2$ or by PECVD of SiN_x), and cell encapsulation, so that the relative difference between several texturing methods normally reduces, as can be noticed in Table 7.4.

Table 7.4 Comparison of weighted AM1.5 reflectivities for mc-Si wafers with several surface treatments [115]

| Reflectivity [%] | Alkaline textured | Acidic textured | Maskless RIE |
|---------------------|-------------------|-----------------|--------------|
| Bare | 34.4 | 27.6 | 11.0 |
| With SiN AR coating | 9.0 | 8.0 | 3.9 |
| SiN & encapsulated | 12.9 | 9.2 | 7.6 |