Enhanced photon management in silicon thin film solar cells with different front and back interface texture

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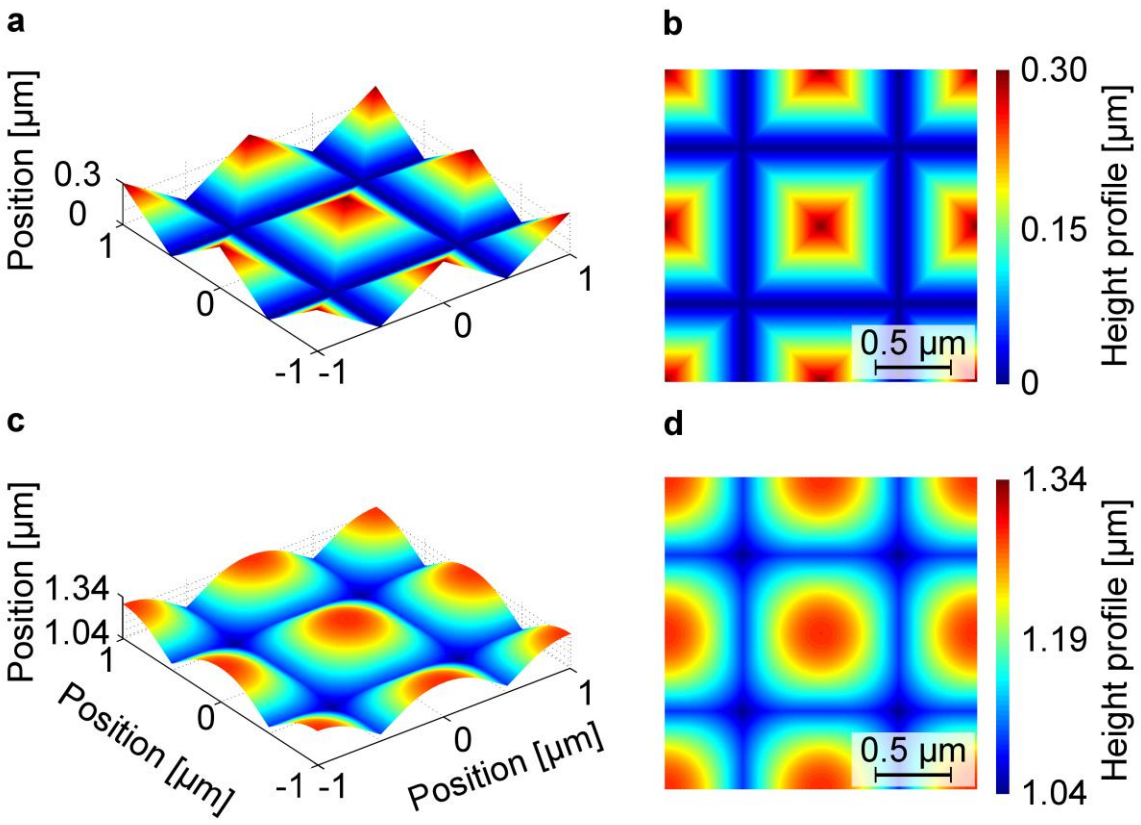
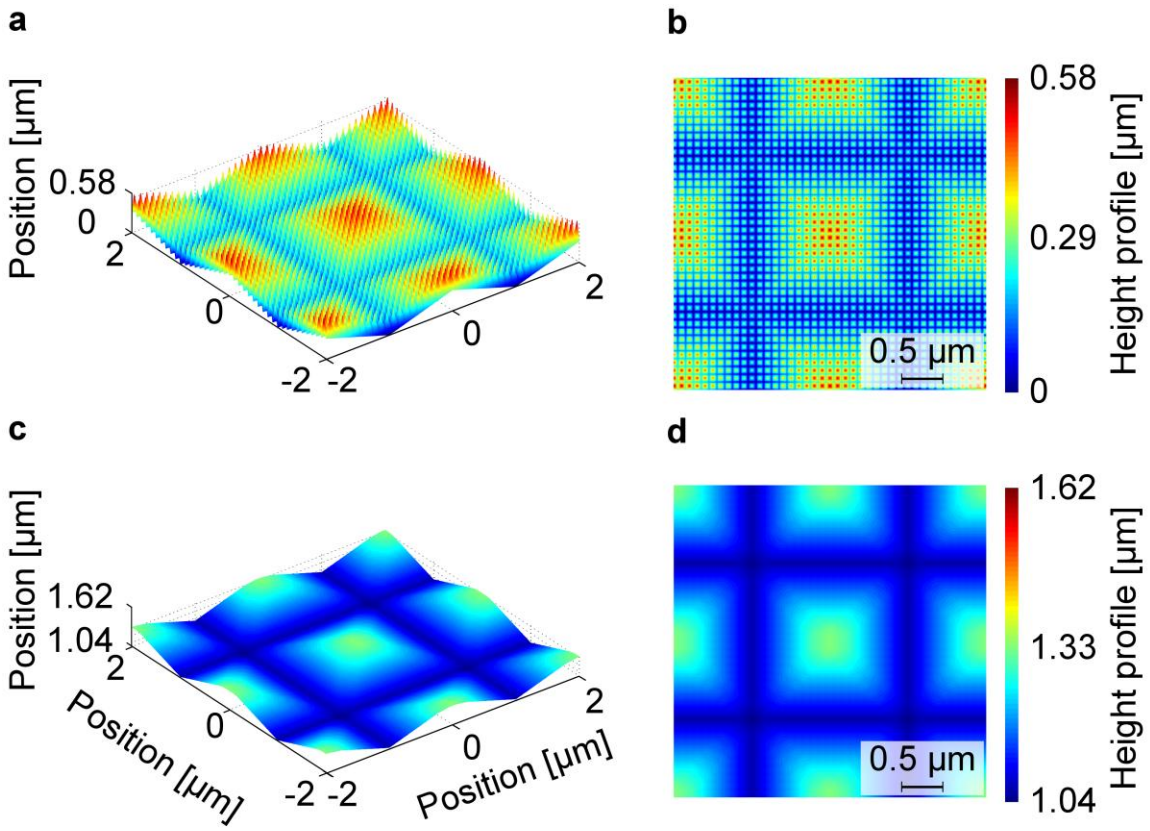
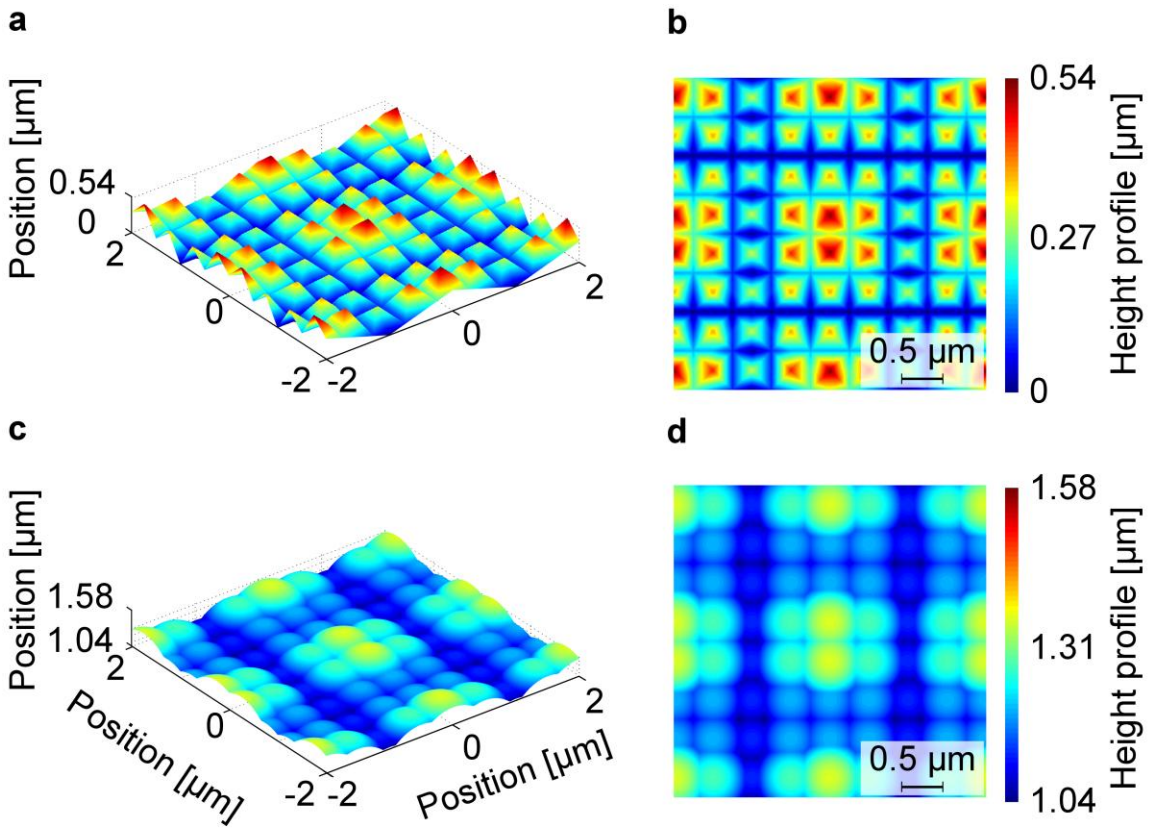


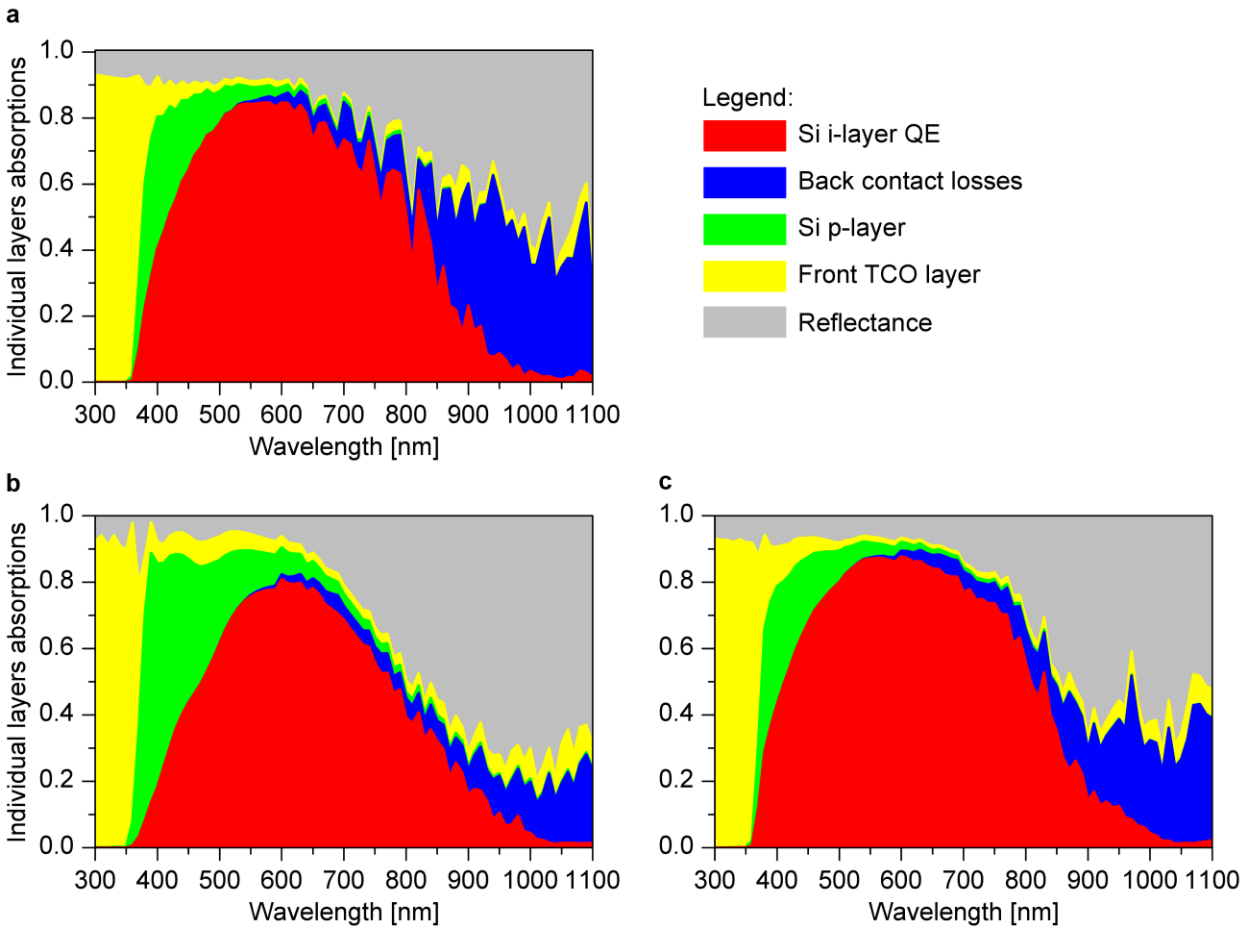
Supplementary Figure S1. Computationally generated surface morphologies for single textured solar cell. (a) Side and (b) top views of front TCO layer. (c) Side and (d) top views of silicon film.



Supplementary Figure S2. Computationally generated surface morphologies for multiscale textured solar cell with small textures period of 0.1 µm. (a) Side and (b) top views of front TCO layer. (c) Side and (d) top views of silicon film.



Supplementary Figure S3. Computationally generated surface morphologies for multiscale textured solar cell with small textures period of 0.5 µm. (a) Side and (b) top views of front TCO layer. (c) Side and (d) top views of silicon film.



Supplementary Figure S4. Individual layers absorptions of μc-Si:H solar cells.

Simulated results are (a) single textured solar cell, multiscale textured solar cell with period of small textures of (b) 0.1 μm and (c) 0.5 μm.

Supplementary Table S1. Calculated currents for individual layers absorption of µc-Si:H solar cells with single textured solar cell and multiscale textured interfaces.

	Texture of solar cell interfaces		
	Single texture P=1 µm	**Multiscale texture, P_L=2 µm, P_S=0.1 µm**	**Multiscale texture, P_L=2 µm, P_S=0.1 µm**
Short circuit current [mA/cm^2]	21.6	19.0	23.0
Back contact losses [mA/cm^2]	6.3	2.6	4.5
Silicon p-layer [mA/cm^2]	1.9	4.3	1.8
Front TCO layer [mA/cm^2]	2.3	2.9	2.4
Reflectance losses [mA/cm^2]	10.5	14.0	11.1