

31. The device of claim **30**, wherein an anti-reflective layer is deposited on the front-side.

32. The device of claim **30**, wherein the set of fused particle reduced area contacts includes a set of fused particle linear contacts.

33. The device of claim **30**, wherein the set of fused particle reduced area contacts includes a set of fused particle point contacts.

34. The device of claim **30**, wherein the fused particle reduced area contacts are formed from a colloidal dispersion including a set of nanoparticles, wherein each nanoparticle of the set of nanoparticles is between about 1 nm and about 100 nm in diameter.

35. The device of claim **30**, wherein the fused particle reduced area contacts include a set of nanoparticles, wherein each nanoparticle of the set of nanoparticles is between about 4 nm and about 20 nm in diameter.

36. A device for generating electricity from solar radiation, comprising:

a wafer doped with a first dopant, the wafer including a front-side and a back-side, wherein the front-side is configured to be exposed to the solar radiation, the wafer further including a front-side diffused region, wherein the front-side diffused region is doped with a second dopant, the second dopant being a counter dopant to the first dopant;

a fused Group IV nanoparticle BSF layer deposited on the back-side;

an electrode deposited on the back-side, wherein the second electrode is in electrical contact with the fused Group IV nanoparticle BSF layer;

wherein when the solar radiation is applied to the front-side, an electrical current is produced.

37. A device for generating electricity from solar radiation, comprising:

a wafer doped with a first dopant, the wafer including a front-side and a back-side, wherein the front-side is configured to be exposed to the solar radiation;

a first fused Group IV nanoparticle thin film doped with a second dopant deposited in a first pattern on the back-side;

a second fused Group IV nanoparticle thin film doped with a third dopant deposited in a second pattern on the back-side, wherein the third dopant is a counter dopant to the second dopant, and wherein the first pattern is interdigitated with the second pattern;

a first electrode deposited on the first fused Group IV nanoparticle thin film; and

a second electrode deposited on the second fused Group IV nanoparticle thin film;

wherein when the solar radiation is applied to the front-side, an electrical current is produced.

38. The device of claim **37**, wherein an anti-reflective layer is deposited on the front-side, wherein the anti-reflective layer passivates the front-side.

39. The device of claim **37**, wherein the first pattern and the second pattern includes lines.

40. The device of claim **37**, wherein the first pattern and the second pattern includes points.

41. The device of claim **37**, wherein the fused Group IV nanoparticle thin film is formed from a colloidal dispersion including a set of nanoparticles, wherein each nanoparticle of the set of nanoparticles is between about 1 nm and about 100 nm in diameter.

42. The device of claim **37**, wherein the fused Group IV nanoparticle thin film includes a set of nanoparticles, wherein each nanoparticle of the set of nanoparticles is between about 4 nm and about 20 nm in diameter.

43. The device of claim **37**, wherein a dielectric layer is deposited between the first pattern and the second pattern.

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