

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202241014950 A

(19) INDIA

(22) Date of filing of Application :18/03/2022

(43) Publication Date : 25/03/2022

(54) Title of the invention : CARRIER SELECTIVE PASSIVATION CONTACT SILICON HETEROJUNCTION SOLAR CELLS

(51) International classification :H01L0031180000, H01L0031021600, H01L0031074700, H01L0031074000, H01L0031054000

(86) International Application No :PCT//
Filing Date :01/01/1900

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Transition metal oxides (TMOs) have been demonstrated for carrier selective passivation contacts for silicon heterojunction (SHJ) solar cells. The TMOs are wide bandgap (3 eV) semiconductors with p/n-type nature and work function ranging from 2 to 7 eV. These non-toxic, dopant free contact layers are best alternate to toxic and dopant hydrogenated amorphous silicon (a-Si:H) layers in SHJ solar cells due to parasitic absorption and resistive losses and complicated process steps of dopant a-Si:H layers. Carrier selective contact SHJ solar cells are most favorable in recent and future days due to capable of high efficiency, low manufacturing cost, low temperature depositions, good passivation, non-toxic, dopant free contact layers and easy fabrications steps.

No. of Pages : 13 No. of Claims : 6