

MATERIAL COMPOSITION OPTIMIZATION FOR PEROVSKITE DEVICES

ABSTRACT

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A method of optimizing material compositions for perovskite devices is provided. The method includes, for each iteration of a plurality of iterations: providing a substrate having an array of multilayer device stacks formed thereon; infiltrating, using an automated liquid handling robot, each multilayer device stack of the array of multilayer device stacks formed on the substrate associated with the iteration with a perovskite solution having a selected precursor composition from a set of different precursor compositions associated with the iteration to form a corresponding perovskite device, resulting in an array of perovskite devices associated with the iteration; performing, using an automated electrical measurement probing robot, electrical characterization on each perovskite device of the array of perovskite devices for generating electrical characterization data associated with the array of perovskite devices associated with the iteration; and predicting, using an AI model, a new set of different precursor compositions for a next iteration or that the set of different precursor compositions associated with the iteration is optimal based on the electrical characterization data of the array of perovskite devices associated with the iteration. There is also provided a corresponding system for optimizing material compositions for perovskite devices.

FIG. 2