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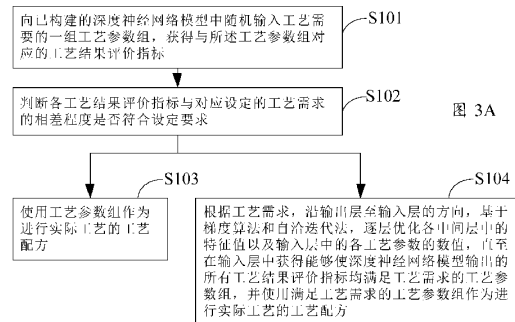
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(54) Title: SEMICONDUCTOR PROCESS FORMULA ACQUISITION METHOD AND SYSTEM AND SEMICONDUCTOR PROCESS DEVICE

(54) 发明名称: 半导体工艺配方获取方法、系统及半导体工艺设备



S101 Randomly input a process parameter set required by a process into a constructed deep neural network model, and acquire process result evaluation indicators corresponding to the process parameter set
S102 Determine whether a difference between the process result evaluation indicators and correspondingly set process requirements meets set requirements
S103 Use the process parameter set as a process formula for an actual process
S104 According to process requirements and on the basis of a gradient algorithm and a self-consistent iterative method, optimize layer by layer feature values in intermediate layers and values of process parameters in an input layer in the direction from an output layer to the input layer until a process parameter set that can make all process result evaluation indicators output by the deep neural network model satisfy the process requirements is acquired in the input later, and use the process parameter set that satisfies the process requirements as the process formula for the actual process

(57) Abstract: A semiconductor process formula acquisition method and system and a semiconductor process device. The method comprises: randomly inputting a set of process parameters into a constructed deep neural network model; determining whether a difference between process result evaluation indicators output by the deep neural network model and correspondingly set process requirements meets set requirements; if yes, using the set of process parameters as a process formula for an actual process; and otherwise, using a gradient algorithm to adjust the process parameters input into the deep neural network model, acquiring, on the basis of a self-consistent

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iterative method, a set of process parameters that can make all process result evaluation indicators output by the deep neural network model satisfy the correspondingly set process requirements, and using the set of process parameters as the process formula for the actual process. The corresponding process formula is automatically acquired according to provided process requirements, and the acquisition efficiency of the process formula is improved.

(57) 摘要: 一种半导体工艺配方自动获取方法、系统及半导体工艺设备, 方法包括: 向已构建的深度神经网络模型中随机输入一组工艺参数; 判断深度神经网络模型输出的各工艺结果评价指标与对应设定的工艺需求的相差程度是否符合设定要求; 若是, 则使用一组工艺参数作为进行实际工艺的工艺配方; 否则, 采用梯度算法调整输入深度神经网络模型工艺参数, 并基于自洽迭代法获取能够使深度神经网络模型输出的所有工艺结果评价指标均满足对应设定的工艺需求的一组工艺参数, 作为实际工艺的工艺配方。实现根据给定工艺需求自动获取对应的工艺配方, 提高工艺配方的获取效率。