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(54) Title: HYDROPHOBIC CONDUCTIVE FILM, PREPARATION METHOD THEREFOR, AND USE THEREOF

(54) 发明名称: 一种疏水导电性薄膜及其制备方法和应用

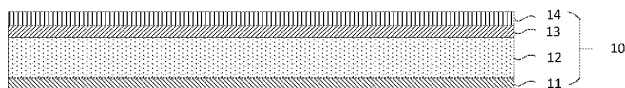


图 1

(57) Abstract: A hydrophobic conductive film (10), a preparation method therefor, and a use thereof, relating to the technical field of semiconductor preparation. The method comprises the following steps: 1) performing a pre-zincation treatment on a surface of a substrate (20), and forming a saturated zinc atom layer (11); 2) alternately feeding a zinc precursor and an oxygen precursor into a reaction chamber and introducing an inert gas for purging, and growing a zinc oxide film layer (12) on a surface of the saturated zinc atom layer (11); 3) performing a post-zincation treatment on the zinc oxide film layer (12) to form a zincated transition layer (13); 4) performing a fluorination post-treatment on the zincated transition layer (13) and forming a zinc fluoride surface layer (14). The prepared hydrophobic conductive film (10) has the characteristics of strong hydrophobicity, good adhesion to the substrate, high film reliability, good film density, precise and controllable thickness, good film uniformity, high step coverage, and high optical transmittance. Compared with microstructures, the hydrophobic conductive film has greater stability, is compatible with various semiconductor packaging processes, effectively resists environmental interference, and can be applied in various hydrophobic scenarios.

(57) 摘要: 一种疏水导电性薄膜 (10) 及其制备方法和应用, 属于半导体制备技术领域。该方法包括以下步骤: 1) 对衬底 (20) 表面进行锌化前处理, 形成锌原子饱和层 (11); 2) 向反应腔中交替通入锌前驱体和氧前驱体, 并通入惰性气体吹扫, 在锌原子饱和层 (11) 表面生长形成氧化锌薄膜层 (12); 3) 对氧化锌薄膜层 (12) 进行锌化后处理形成锌化过渡层 (13); 4) 对锌化过渡层 (13) 进行氟化后处理形成氟化锌表层 (14)。所制得的疏水导电性薄膜 (10) 具有疏水性强、膜基结合力好、膜层可靠性高、膜层致密性好、厚度精准可控、薄膜均匀性好、台阶覆盖率高、光学透过率高的特点, 相比微结构, 具有更强的稳定性, 可以兼容各类半导体封装工艺, 有效对抗环境干扰, 能应用于多种疏水场景。

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WO 2025/025367 A1

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