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(54) Title: PROCESS FOR RESOURCE COMPREHENSIVE RECYCLING OF WAFER CUTTING, GRINDING AND POLISHING WASTEWATER IN SEMICONDUCTOR MANUFACTURING PROCESS

(54) 发明名称: 半导体制程中晶圆切磨抛废水资源化综合回收利用工艺

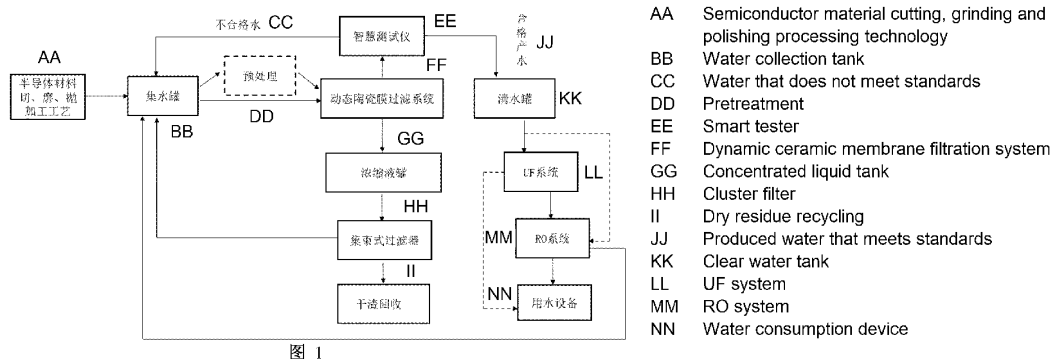


图 1

(57) Abstract: The present invention provides a process for the resource comprehensive recycling of wafer cutting, grinding and polishing wastewater in a semiconductor manufacturing process. Solid-liquid separation treatment is carried out via a dynamic ceramic membrane filtration system and a cluster filter in sequence without any chemical reagent added, and after being tested to meet standards, the resulting clear liquid is purified via a UF system and/or an RO system, so as to achieve the recycling of wastewater in a semiconductor manufacturing process. Also provided is a method for preparing a ceramic membrane used for the process. The ceramic membrane has hydrophilic properties due to the presence of titanium oxide and has high flexural strength and a high wear resistance coefficient due to the presence of zirconium oxide, and the ceramic membrane has fouling resistance, anti-clogging performance, and high filtration precision due to surface coating modification. The process involves directly performing solid-liquid separation while recycling solid and liquid phases. Recycled semiconductor fine particles do not contain other impurities and chemical agent residues, and are directly subjected to in-situ concentrated pneumatic dewatering, drying, and bagging in the cluster filter, facilitating recycling and transportation. The recycling rate of wastewater is higher than 97%, and the recycling rate of the semiconductor fine particles is higher than 98%.

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本国际公布:

— 包括国际检索报告(条约第21条(3))。

(57) 摘要: 本发明提供了半导体制程中晶圆切磨抛废水资源化综合回收利用工艺, 在不添加任何化学试剂的条件下, 依次经动态陶瓷膜过滤系统和集束式过滤器进行固液分离处理, 产生的清液经检测合格后经UF系统和/或RO系统纯化实现半导体制程废水回收利用, 同时提供了一种用于该工艺的陶瓷膜的制备方法, 由于该陶瓷膜因含有氧化钛而具有亲水属性, 因含有氧化锆而具有高弯折硬度, 耐磨系数高, 表面涂层改性耐污染、不易堵塞, 过滤精度高。该工艺直接进行固液分离, 同时回收固液两相, 回收的半导体微细颗粒, 不含其他杂质和化学药剂残留物, 直接在集束式过滤器内原位集中气压脱水干化装袋, 利于回收利用并方便运送, 废水回收率高于97%, 半导体微细颗粒回收率高于98%。