

ABSTRACT

RECYCLING METHOD OF WASTEWATER FROM WAFER CUTTING, GRINDING, AND POLISHING PROCESSES IN SEMICONDUCTOR MANUFACTURING PROCESS

The present disclosure discloses a recycling method of wastewater from wafer cutting, grinding, and polishing processes in a semiconductor manufacturing process, in which, without any chemical reagents, solid-liquid separation treatments are sequentially performed on the wastewater through a dynamic ceramic membrane filtration system and a cluster filter, and the resulting clear liquid enters a UF system and/or a RO system when being detected to be qualified, achieves the recycling of semiconductor manufacturing wastewater. The present disclosure further discloses a method for preparing a ceramic membrane used in the recycling method. The ceramic membrane has a hydrophilicity due to the presence of titanium oxide and a high bending stiffness due to the presence of zirconium oxide; in addition, the ceramic membrane has a high wearing resistance, a surface coating resistant to contamination and less prone to clogging, and a high filtration accuracy. The solid-liquid separation is directly performed and both solid-phased and liquid-phased targets are recycled. The recycled semiconductor fine particles, free of other impurities and chemical agent residues, can be directly and concentratedly dewatered and dried in-situ by air pressure and bagged in the cluster filter, facilitating recycling and transportation of the semiconductor fine particles. The recycling rate of the wastewater is higher than 97%, and the recycling rate of semiconductor fine particles is higher than 98%.

FIG. 1