

METHOD FOR CAPTURING CARBON DIOXIDE IN POWER STATION FLUE GAS AND DEVICE THEREFOR

ABSTRACT

A method for capturing carbon dioxide in a power station flue gas and a device therefor. The method comprises the following steps: 1) using a composite aqueous absorbent consisting of an organic amine and a functionalized ionic liquid as a CO₂ absorbent; 2) forming different liquid layers through still clarification; 3) performing heating and resolution on a liquid obtained by separating and rich in A·CO₂ and B·CO₂, to recycle to obtain a high-concentration CO₂ gas and the composite aqueous absorbent; 4) recycling the composite aqueous absorbent obtained in Step 3); 5) cooling the high-concentration CO₂ gas, to make hot water vapor therein condense; 6) performing gas-liquid separation on the high-concentration CO₂ gas undergone the cooling in Step 5), to obtain a CO₂ gas with the purity $\geq 99\%$; 7) turning the high-purity CO₂ gas into the liquid, to obtain a high-concentration industrial-grade liquid carbon dioxide product. The method has features of high capture efficiency, low energy consumption, and simplicity in the process.

Fig. 1