

ABSTRACT OF THE DISCLOSURE

A process and system for removing ammonia from an aqueous ammonia solution. A first aqueous solution and the ammonia solution are flowed respectively through a first and a second separation chamber of a bipolar membrane electrodialysis ("BPMED") stack. The first separation chamber is bounded on an anodic side by a cation exchange membrane and the second separation chamber is bounded on a cathodic side by the cation exchange membrane and on an anodic side by a bipolar membrane. The bipolar membrane has an anion-permeable layer and a cation-permeable layer respectively oriented to face the stack's anode and cathode. While the solutions are flowing through the stack a voltage is applied across the stack that causes the bipolar membrane to dissociate water into protons and hydroxide ions. The protons migrate into the second separation chamber and react there with ammonia to form ammonium ions that migrate to the first separation chamber.

