

ABSTRACT

Capacitive Deionization (CDI) is one of desalination methods purposed to separate salts from saline water. This method utilize two carbon electrodes by applying an electrical potential between them to adsorb ionic salts based on the Coulombic force mechanism. The adsorption capability could be influenced by the flowrate of the saline water of the CDI cell. In this present study, we build a set of CDI's instrument which consist of a DC peristaltic pump configured with a microcontroller arduino mega, 4x3 keypad and h-bridge motor driver. This instrument could control the flowrate in the range of 0-30 ml/min. Here, we used cell CDI with two kinds of electrodes; carbon electrodes based Norit and its mixtures with the ratio of Norit: Graphite: PVA = 8: 1: 1 and electrode-based carbon coconut shell with its mixture of Graphite: PVA = 8: 1: 1. These two electrodes are made with similar dimension of 3 cm x 3 cm. The CDI measurements are carried out with flowrate varied by 5 ml/min, 10 ml/min, and 15 ml/min. The percentage reduction of salt level are calculated from its conductivity shifting measured by a TDS meter "Lutron YK-22CT". The resulting study showed that the greater the flowrate, the smaller percentage reduction of salts level.