

## Design and Implementation of a Wearable Artificial Kidney Prototype for Home Dialysis

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**Abstract :** Hemodialysis is a life-preserving treatment for a number of patients with kidney failure. The standard procedure of hemodialysis is three times a week during the hemodialysis procedure, the patient usually suffering from many inconvenient, exhausting feeling and effect on the heart and cardiovascular system are the most common signs. This paper provides a solution to reduce the previous problems by designing a wearable artificial kidney (WAK) taking in consideration a minimization the size of the dialysis machine. The WAK system consists of two circuits: blood circuit and dialysate circuit. The blood from the patient is filtered in the dialyzer before returning back to the patient. Several parameters using an advanced microcontroller and array of sensors. WAK equipped with visible and audible alarm system to aware the patients if there is any problem.

**Keywords :** artificial kidney, home dialysis, renal failure, wearable kidney

**Conference Title :** ICBEDA 2017 : International Conference on Biomedical Electronics, Devices and Applications

**Conference Location :** Istanbul, Türkiye

**Conference Dates :** July 27-28, 2017