

ABSTRACT

In the present research work dense plasma focus system was used for deposition of chromium nitride thin film. The research work is motivated by the remarkable thermal, electronic and mechanical properties of chromium based nitride thin films which have many applications like in photocells, batteries, solar cells, optics, computer memory, and cutting tools.

This work reports the growth of chromium nitride thin film using Plasma focus device. Synthesize of thin film using different deposition techniques have been reported earlier but the use of Plasma focus technique is not only efficient, simple and economical but also provide good adhesion and high deposition rate in less time compared to other available thin film synthesis techniques. The results of the experiment show the successful growth of chromium nitride thin film. The XRD results shows that crystallinity of CrN thin film increases up to fifteen number of focus shots and then decreases for twenty focus shots. Scanning electron micrograph shows granular structure of thin film for ten focus shots which are in the form of elongated grains. Surface roughness measured by atomic force microscope shows non linear behavior by increasing focus shot.