EMERGING COMMUNICATIONS
TECHNOLOGY INSTITUTE
UNIVERSITY OF TORONTO

E-beam metal Evaporator

Document Number:
Document Owner: ECTI
Approved by:
Created : July 8, 2008
Revision #:
Revision date:

Summary:
This document describes presents information on metal evaporation using the e-beam evaporator.

Table of content

1 Associated Documents & References

MSDS if chemicals or gas involved.
e-beam evaporator Standard Operating Procedure
Rules and procedures of cleanroom

2 Equipment Used

The ebeam evaporator (BOC Edwards Auto 306) is located in Bahen Cleanroom 7175. If you require technician assistance, check availability with him before reserving the equipment. Users have to go through regular training before using this equipment alone.

3 Verifications Prior to Processing

Check that the thickness monitor crystal usage is between 10 and 800.
Check that the cryopump temperature is below 15 Kelvin.

4 Recipe description

Typical currents to evaporate metal are

Cr 25-40 mA
Al (very tricky to evaporate) 60 mA
Au 100 mA
Ti 30-40 mA
Pd 16 mA

If you are going higher than 150 mA (extremely hot) , something is wrong. Contact technician.

5 Technical Data

For useful information on metals, crucibles, evaporation rates and techniques see www.lesker.com and http://www.ee.byu.edu/cleanroom/metal.phtml .

To buy metal pellets Kurt Lesker Ltd. 416 588 2610 (Deon Sanders)

To buy crucibles for the Bahen e-beam evaporator

SCM Limited http://www.scm-inc.com/ 845 368 0240 (Aftab Dar)

4000-1 graphite for Au, Ag
4000-2 BN
4000-3 vitreous carbon for Cr, Ni
4000-4 molybdenum for Cu
4000-5 intermetallic for Al

(these crucibles are called " 4 ml" but their internal volume is 2 ml.

Fill the crucible 0.6 to 0.8 full of metal. Do not overfill.

Using the wrong crucible for a metal will crack the crucible or contaminate your evaporated film.

6 Measurements & Statistical Process Control

7 Record of Revisions

Rev. 0 First Edition