

**University of Minnesota Nano Fabrication
Center
Standard Operating Procedure**

Badger Name: P5 Ebeam Spinner CEE1

Revision Number: 2.0

Model: 200X

Revisionist:

Kevin Roberts

Location: PAN Bay 5

Date:

03/17/2020

1 Description

CEE spinner is programmable used for applying E-beam resists and imprint resists uniformly on a substrate. Spin speed, length, acceleration, and exhaust rate can be altered to achieve desired resist thickness.

2 Safety

a Close the system cover prior to spinning to prevent a broken substrate from causing an injury.

3 Restrictions/Requirements

a Complete either the E-beam or Nanoimprint short courses. b No photoresists. Only E-beam resists.

c No spin speeds higher than 10000 RPM and accelerations of 30000 RPM/sec.

4 Required Facilities

a 120 V/10A

b Vacuum 20 in Hg

c N2 45-55 psi

d Exhaust 1 inch

O.D. e Drain

post 3/4"

5 Definitions

a Bold and underlined texts are buttons to be pushed.

6 Setup

a Turn on the system. Wait turn until the login in screen comes up.

7 Operating Instructions

a Press **Login**- password **user**

<return> b Press **Run Spin Process**

c Press **Load**

d Highlight the process you would like to load then press <Enter>.

e To edit a spin recipe, press **Edit recipe**. This will show spin recipe step.

f To edit the parameters of a spin recipe, touch the parameter that is to be modified then changing the number with the touch pad. After all the changes have been made to the spin recipe save the spin recipe under a new name. To save a spin recipe press **Save** and enter a new name for the recipe. Do not over write spin recipes with 1_1000, 1_2000, 1_3000, 1_4000, 1_5000, 1_6000, 1_7000 etc. Do not over write the above basic recipes, these recipes will be first in the list. Do not put your recipe ahead of these or it will be deleted.

- Number of steps for a spin recipe-100 steps
- Maximum spin speed-12,000 RPM

University of Minnesota Nano Fabrication Center

Standard Operating Procedure

- Maximum acceleration is 30,000 RPM/sec
- Exhaust 0-100%
- Time
- No automatic dispense.

- g Check the waste disposal jug for the liquid waste level.
- h Lift cover, Load and center substrate. This is very important to center your substrate for high speed operation.
- i Turn vacuum on by pressing vacuum **Hold** button on, the button should read release.
- j Check that wafer is centered by press **Start centering** button. If substrate not centered, lift lid, turn substrate vacuum off, re-center substrate, turn vacuum on, close lid, and recheck centering.

University of Minnesota Nano Fabrication Center

Standard Operating Procedure

j Lift the lid; dispense the correct amount of resist for your substrate. l Close the lid.

m Press **start spin**

n After spin is complete, press

OK. oOpen lid

p Remove substrate.

q Repeat if necessary.

r Clean the bowl using solvents and wipes.

Standard Recipes

1_1000

- 750rpm/10000 rpm/sec/2sec/None/10%
- 1000rpm/30000 rpm/sec/25sec/None/10%
- 750rpm/10000 rpm/sec/10sec/None/10%
- 750rpm/10000 rpm/sec/3sec/None/50%

1_2000

- 1500rpm/10000 rpm/sec/2sec/None/10%
- 2000rpm/30000 rpm/sec/25sec/None/10%
- 1500rpm/10000 rpm/sec/10sec/None/10%
- 750rpm/10000 rpm/sec/3sec/None/50%

1_3000

- 2000rpm/10000 rpm/sec/2sec/None/10%
- 3000rpm/30000 rpm/sec/25sec/None/10%
- 2000rpm/10000 rpm/sec/10sec/None/10%
- 2000rpm/10000 rpm/sec/3sec/None/50%

1_4000

- 3000rpm/10000 rpm/sec/2sec/None/10%
- 4000rpm/30000 rpm/sec/25sec/None/10%
- 3000rpm/10000 rpm/sec/10sec/None/10%
- 3000rpm/10000 rpm/sec/3sec/None/50%

1_5000

- 4000rpm/10000 rpm/sec/2sec/None/10%
- 5000rpm/30000 rpm/sec/25sec/None/10%
- 4000rpm/10000 rpm/sec/10sec/None/10%
- 4000rpm/10000 rpm/sec/3sec/None/50%

1_6000

- 4000rpm/10000 rpm/sec/2sec/None/10%
- 6000rpm/30000 rpm/sec/25sec/None/10%
- 4000rpm/10000 rpm/sec/10sec/None/10%
- 4000rpm/10000 rpm/sec/3sec/None/50%

1_2000

- 4000rpm/10000 rpm/sec/2sec/None/10%
- 7000rpm/30000 rpm/sec/25sec/None/10%
- 4000rpm/10000 rpm/sec/10sec/None/10%

University of Minnesota Nano Fabrication Center

Standard Operating Procedure

- 4000rpm/10000 rpm/sec/3sec/None/50%

8 Problems/Troubleshooting