

**Southwest Center for Microsystems Education (SCME)  
University of New Mexico**

**MEMS Fabrication Topic**

**Photolithography Overview  
Learning Module**

This booklet contains five (5) units:  
Knowledge Probe (Pre-test)  
Primary Knowledge (Reading Material)  
Terminology Activity  
Resist Thickness Activity  
Assessment

A Learning Map is provided for the instructor as a suggested outline for how to implement this learning module.

*This learning module provides an overview of the most common photolithography process used in the fabrication of microelectromechanical systems (MEMS), photolithography terminology and basic concepts. Students explore some of these concepts in the provided activities.*

Target audiences: High School, Community College, University

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# Learning Module Map for Photolithography Overview

*This learning module provides an overview of the most common photolithography process used in the fabrication of microelectromechanical systems (MEMS), photolithography terminology and basic concepts. Students explore some of these concepts in the provided activities.*

Learning Module units (5):

- Knowledge Probe (pre-test)
- Photolithography Overview PK (reading material)
- Terminology Activity
- Resist Thickness Activity
- Photolithography Assessment

Following is a suggested map on the implementation of this learning module.

IMPORTANT STEPS	KEY POINTS	REASONS
Complete the Knowledge Probe (KP)	The KP assesses the participants' current knowledge of the Photolithography process.	By comparing the results of the KP to the results of the Final Assessment, one can determine the level of learning that took place as a result of this learning module.
Present the <u>Photolithography Overview PK</u>	<p>There is a short narrated presentation that can be viewed by the participants on-line, OR</p> <p>you can present this learning module to the class using the non-narrated presentation. The narrated presentations can be downloaded by the participants from <a href="http://scme-nm.org">scme-nm.org</a>.</p> <p>The instructor can download the non-narrated presentation once registered with the SCME website.</p> <p>Participants should read the PK after viewing the presentation.</p>	<p>Viewing the presentation prior to reading the primary knowledge unit provides an overview of the material to be discussed.</p> <p>An introduction into photolithography is needed to help participants better understand the two activities.</p>

Complete the activity “Photolithography Terminology”	Participants should complete the crossword puzzle and answer the Post-Activity questions.	This activity helps the participants to better understand the terminology associated with photolithography processes and the steps of the processes.
Complete the activity “Resist Thickness”.	Participants explore the relationship between resist thickness vs. spin speed and resist thickness vs. resist viscosity.	This activity requires the participants to be able to interpret graphs as well as construct graphs using a set of real data. The knowledge in this activity is needed to better understand problems associated with the coat process.
Complete the Photolithography Final Assessment (FA).	Have the participants complete the <u>Photolithography Overview</u> assessment.	Participants are evaluated on what they have learned about photolithography, its terminology and the various processes within photolithography.

*Adapted from Graupp, P. & Wrona, R. (2006) The TWI Workbook: Essential Skills for Supervisors. New York, NY. Productivity Press.*

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