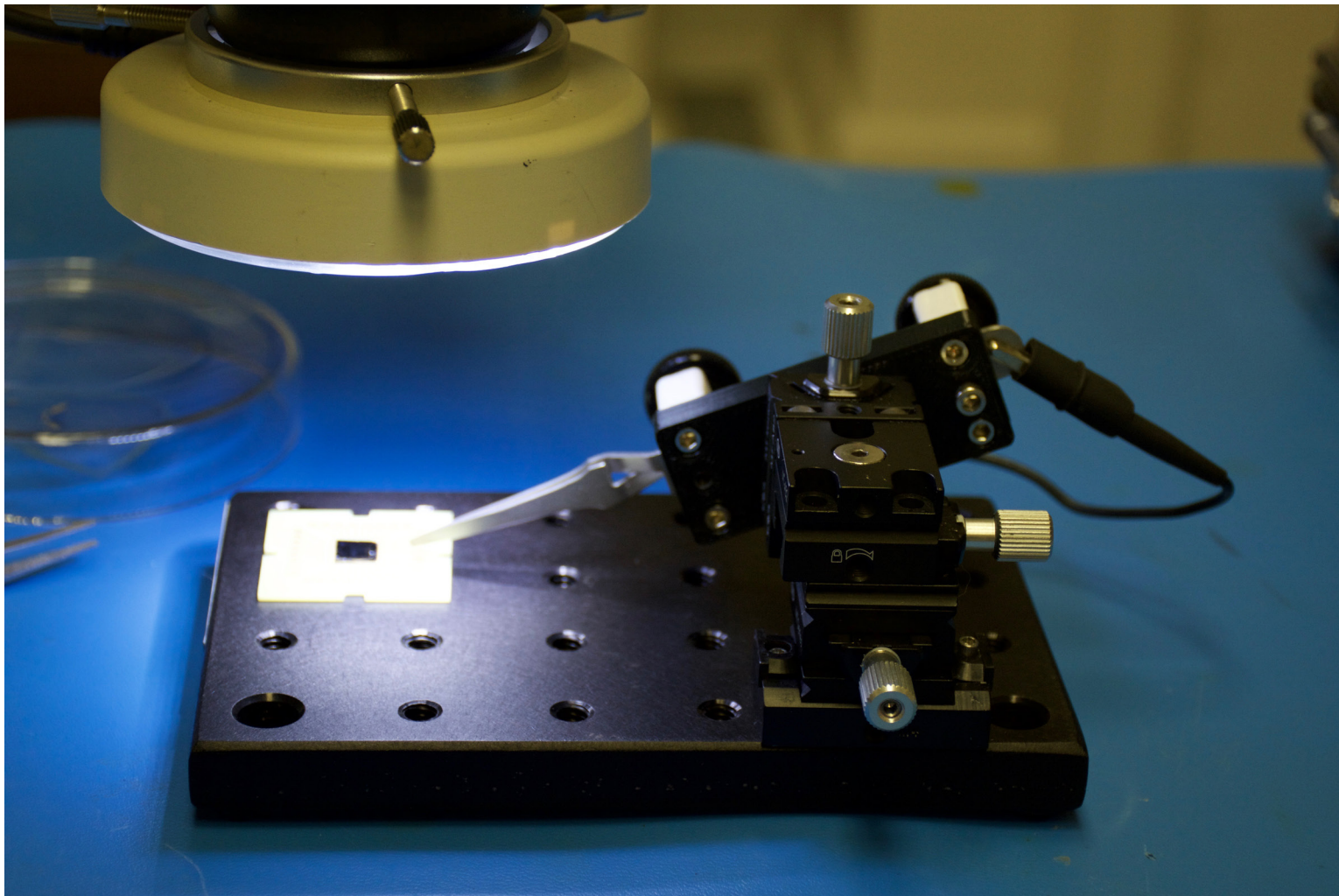


EPHEMERON LABS INC.

Conductive Epoxy Manual Wire-bonding

Dr. Terrence McGuckin



## Overview

Wire bonding with conductive epoxy and bond wires is compatible with a wide range of samples and geometries. It is highly flexible and there is no need to figure out bonding conditions or recipes. Essentially the technique is to apply a small amount of epoxy to a bond wire and then micro-position it and drop it in place. The epoxy will stick to the surface of the bond-pad and can be cured on a hot plate.

This procedure can be repeated as many times as needed. It is *highly* recommended that you practice on a sample that is not critical, even a glass slide will work. Please follow ESD procedures and refer to the E2101 data sheet on how to prepare the epoxy. Good Luck!

# Manual Wire-bonder

Reversible tweezers

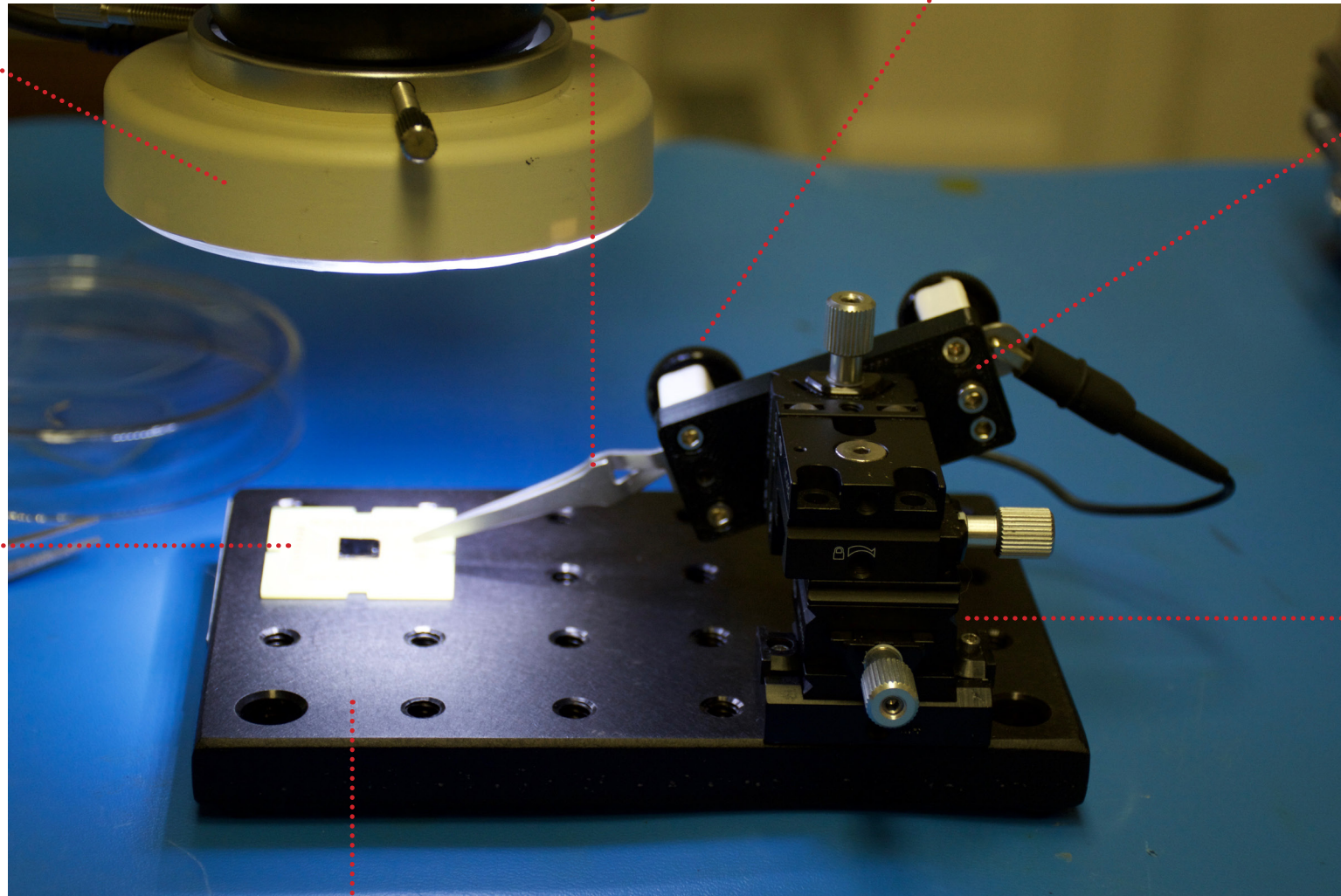
Tweezer actuator knob

Long working distance  
Stereo microscope

Tweezer adapter

Chip carrier with  
sample

3 axis micro-  
positioner



Optical bread board

## Materials List

Ephemeron Labs manual wire-bonder

Epotek E2101 conductive epoxy:

[http://www.epotek.com/site/administrator/components/com\\_products/assets/files/Style\\_Uploads/E2101.pdf](http://www.epotek.com/site/administrator/components/com_products/assets/files/Style_Uploads/E2101.pdf)

Tanaka electronics 25 um bond wire:

<http://www.topline.tv/Tanaka.html>

Stereo Metallurgical Microscope

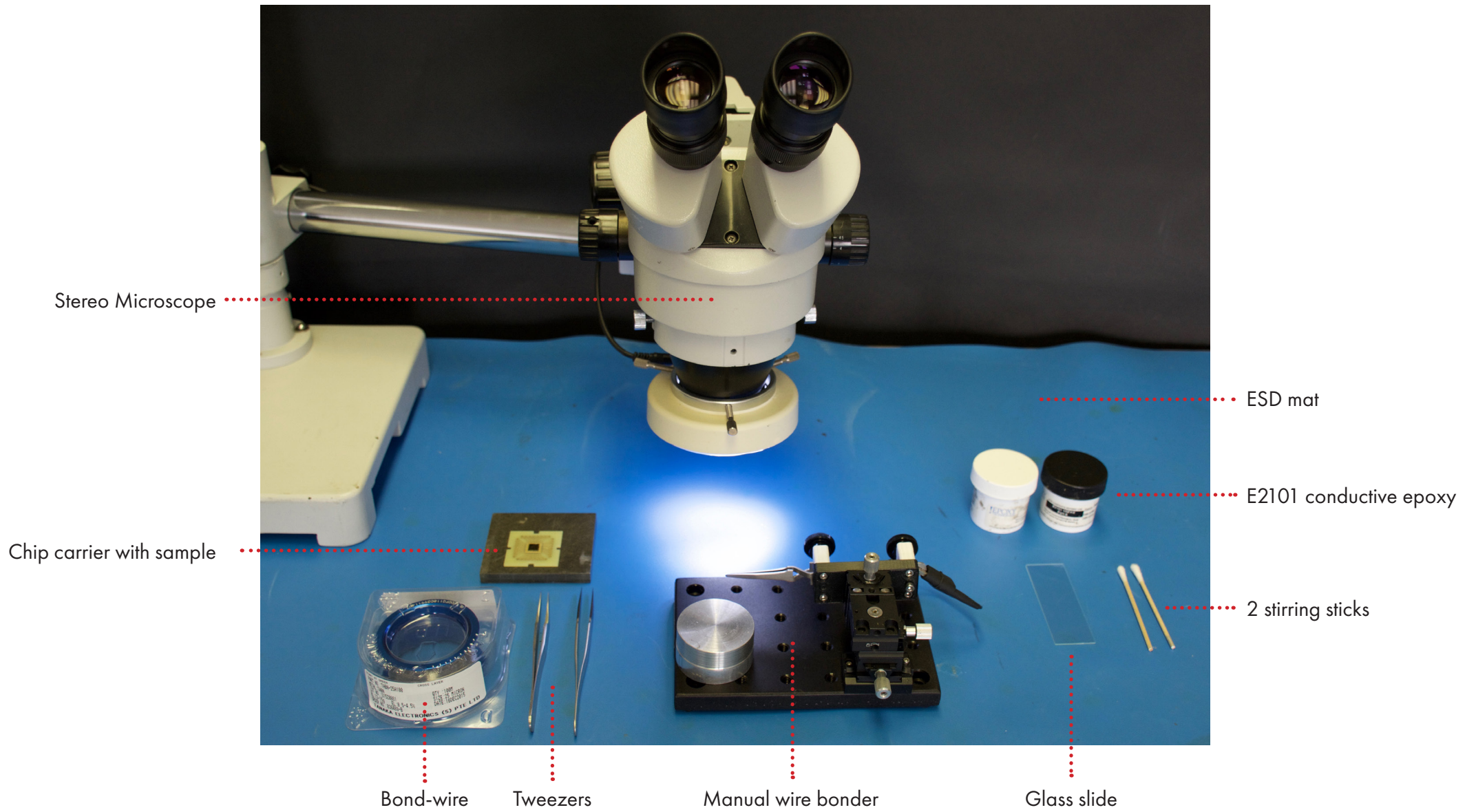
Tweezers

Stirring Sticks

Glass slide

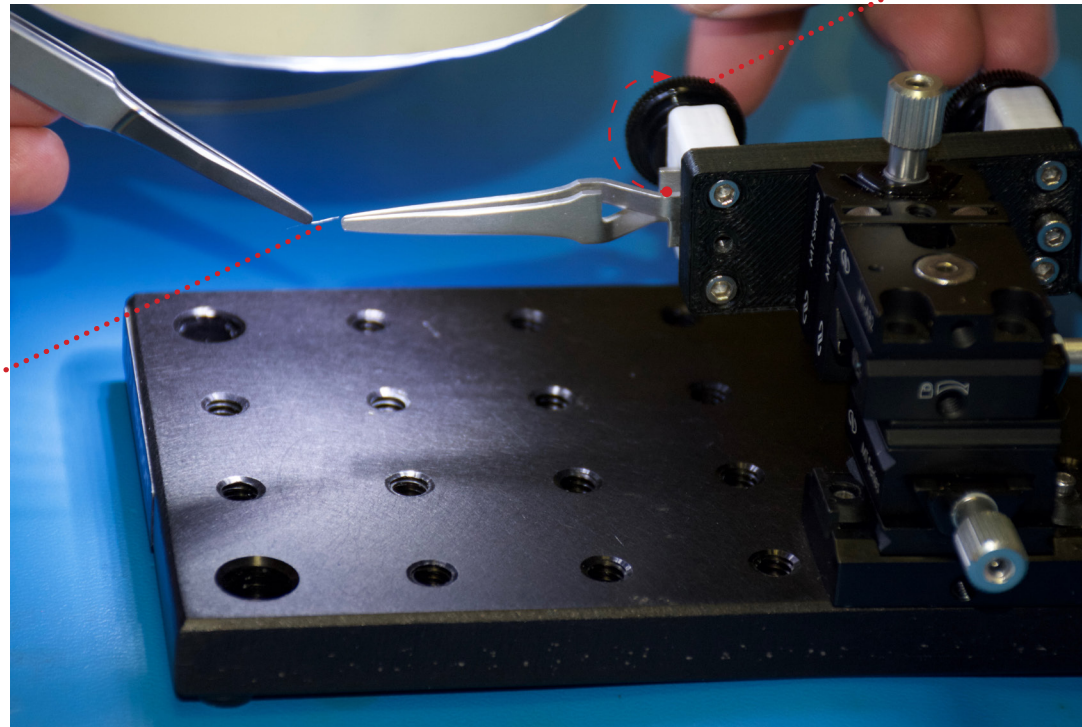
ESD Mat

# Setup



## Step 1: Insert Bond-wire

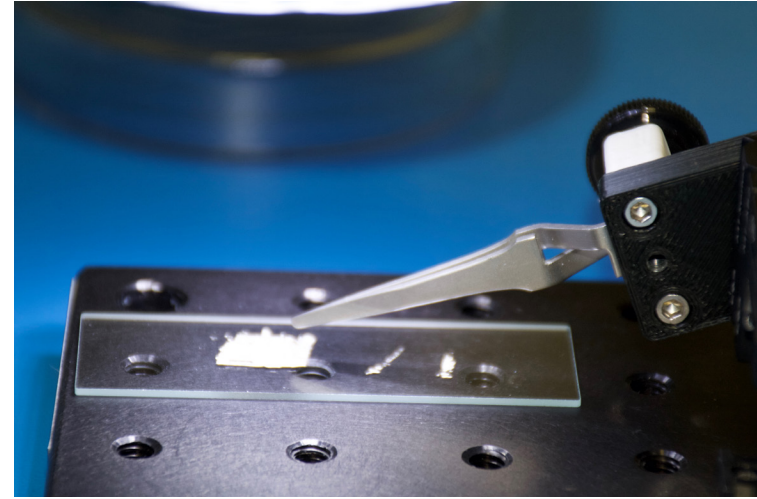
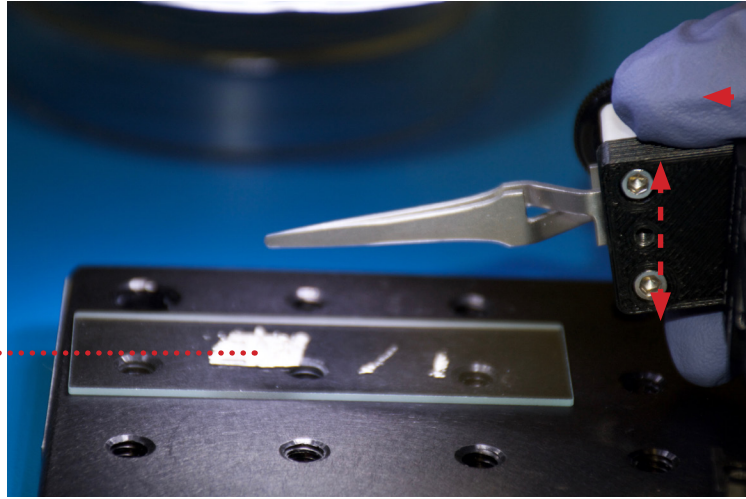
Insert bond-wire



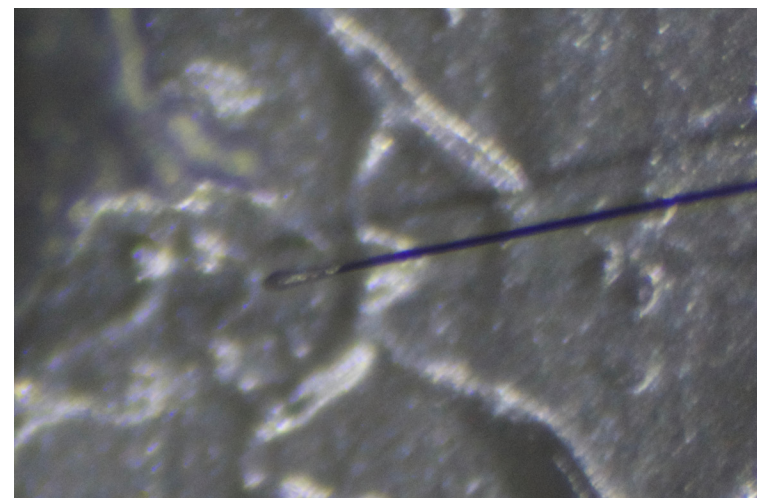
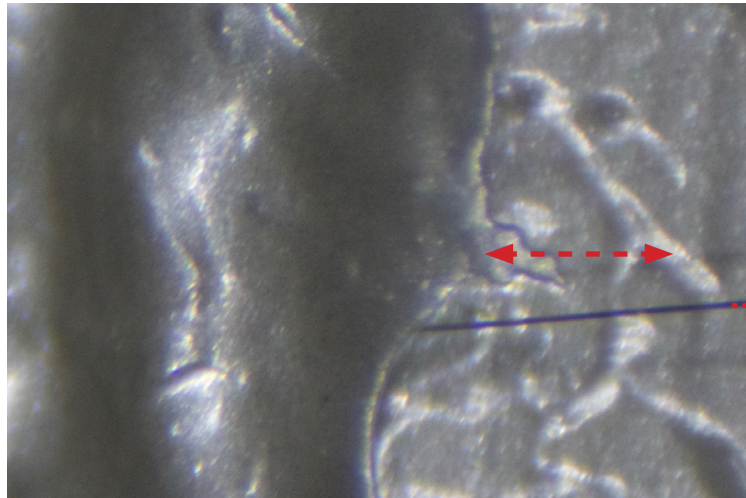
Close tweezers, with out clamping bond-wire to hard

## Step 2: Apply epoxy to bond wire

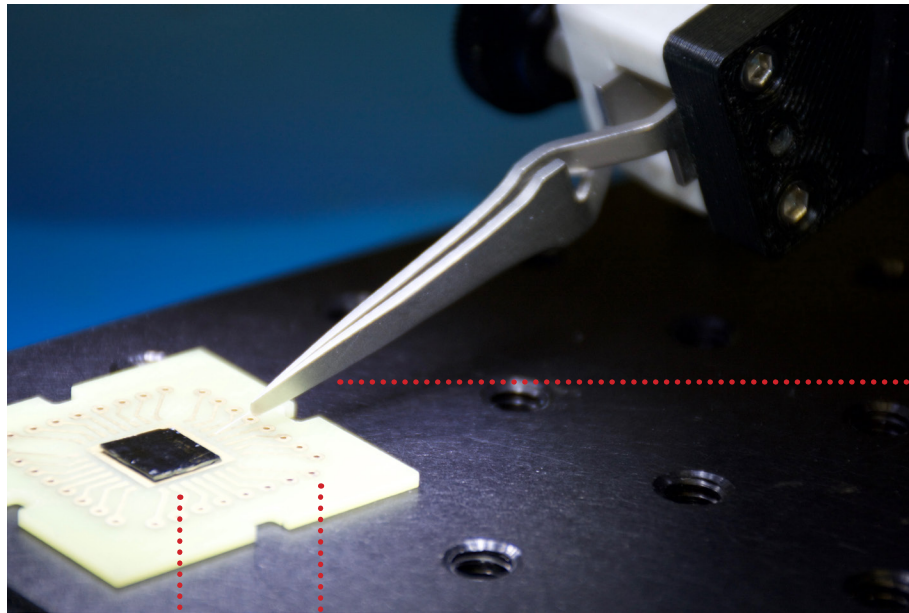
Rotate down and position bond-wire



Push bond-wire into epoxy and withdraw



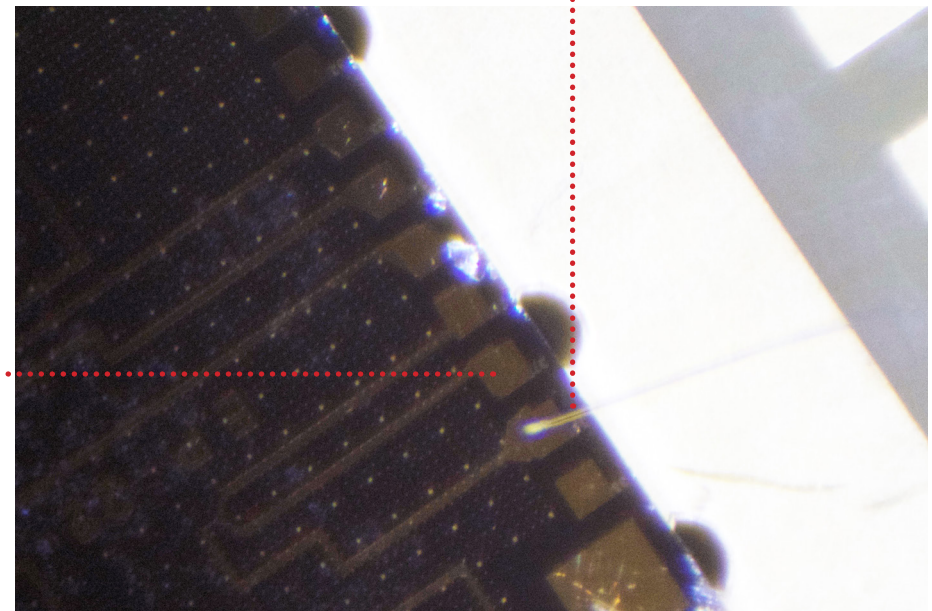
### Step 3: Position bond wire over sample



Sample

Chip carrier

Bond-wire with epoxy

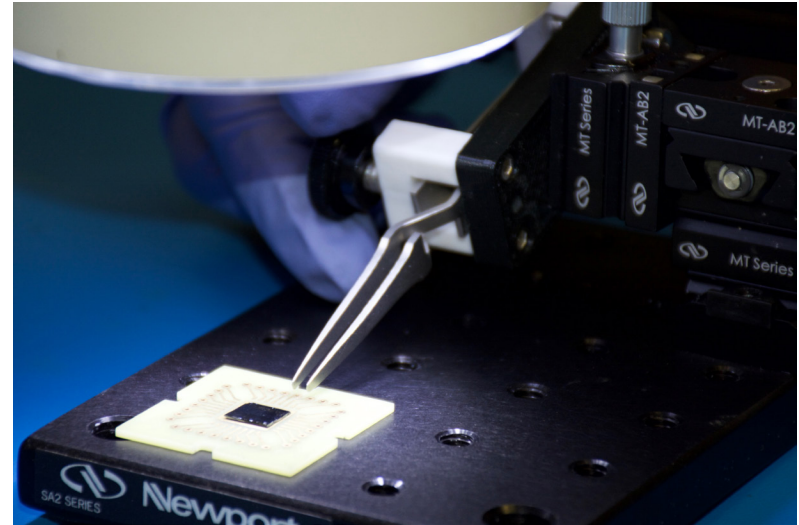
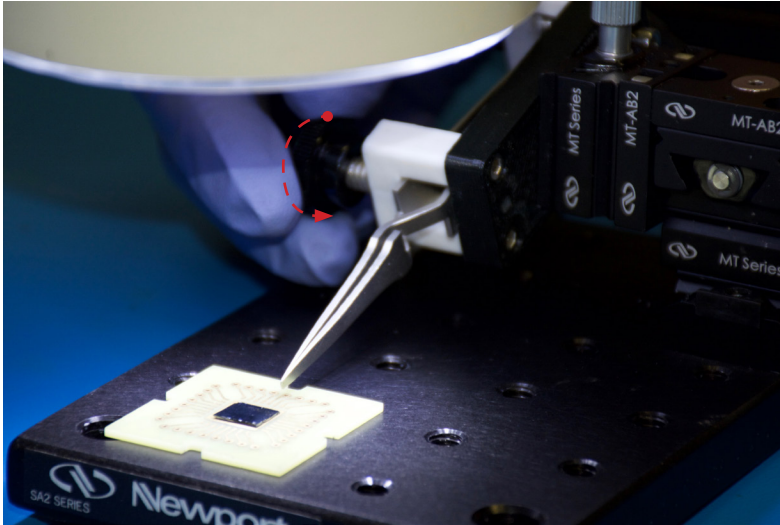


Bond-pads

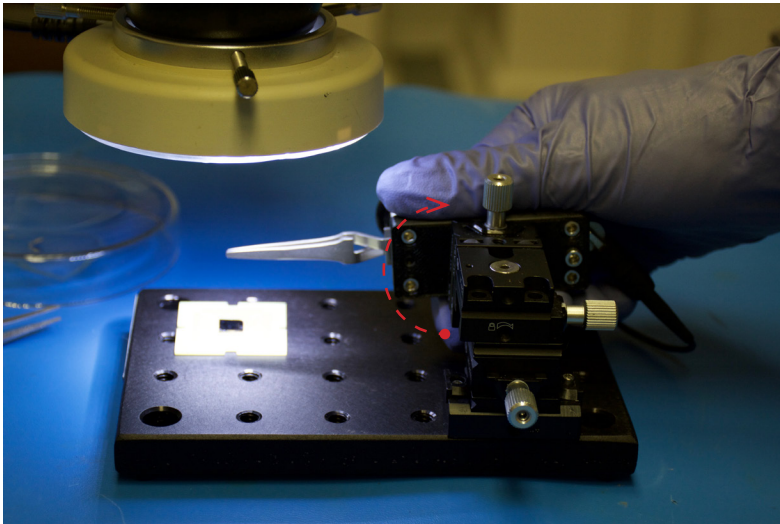


## Step 4: Release bond-wire

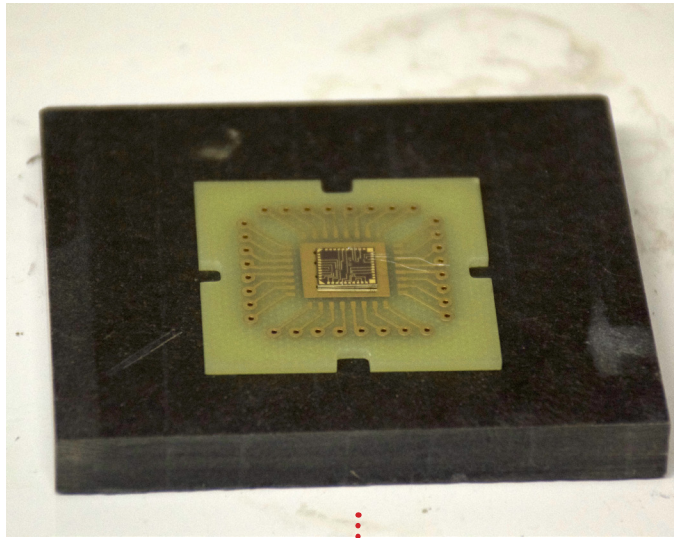
Rotate knob counter clockwise to open tweezers.



Tilt tweezers up to release bond-wire with out moving it.



## Step 5: Cure epoxy.



Hot plate at 175 C

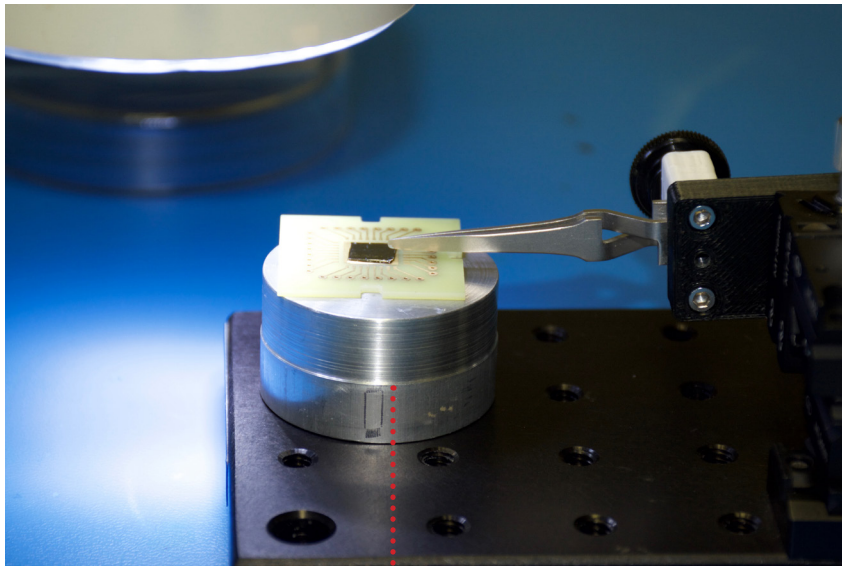
Cure time is:

15 minutes at 175 C

1 hour at 150 C

Will cure at lower temperatures

## Other Options



Aluminum sample mount to rotate  
sample and change approach angle