

# Questionnaire for Requesting KMF Service

## 1. About yourself

Today's Date: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title:  Graduate student  Postdoc.  Others: \_\_\_\_\_  
Phone: \_\_\_\_\_  
Email: \_\_\_\_\_  
Academic Advisor: \_\_\_\_\_  
Department/Institution: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## 2. About your request:

How many samples do you have for this request? \_\_\_\_\_  
Will you have more requests for similar samples in the future? \_\_\_\_\_  
What is the size of substrates? \_\_\_\_\_  
What material is the substrate made of? \_\_\_\_\_  
What are the materials on top of the substrates? \_\_\_\_\_

The job will be done:  by myself using KMF,  by facility staff

## 3. What is the nature of your request: (check all that apply, then answer all the questions in the corresponding sections below.)

- Photolithography/Resist preparation
- Electron Beam lithography
- Scanning electron microscopy (SEM)/Energy dispersive spectrometer (EDS)
- Atomic force microscopy (AFM)
- Magnetic force microscopy (MFM)
- Raman spectrograph
- Thin film deposition
- Plasma etching/cleaning
- Wet chemical etching
- Wafer dicing
- Surface profiling
- Cleanroom usage
- Others \_\_\_\_\_

I have no idea. You can skip all the rest of this questionnaire.

#### 4. Photolithography/Resist preparation

What type of photoresists would you like to use? \_\_\_\_\_  
What is the desired thickness of the photoresist? \_\_\_\_\_  
What type of light source would like to use? \_\_\_\_\_  
What is the minimum feature size that you want to make? \_\_\_\_\_  
What is the total area coverage of patterns on your sample? \_\_\_\_\_  
What is the size of your substrates? \_\_\_\_\_  
Are the round wafers or square chips? \_\_\_\_\_  
Do you have photomasks ready? \_\_\_\_\_  
If you do, then what is the plate size of the photomask? \_\_\_\_\_  
Do you need layer to layer registration? \_\_\_\_\_  
If yes, How many layers are there? \_\_\_\_\_  
    What is the accuracy for layer to layer registration? \_\_\_\_\_  
Is there any other special requirement? \_\_\_\_\_

*For do-it-yourself only*

Do you have any prior experience with photolithography? \_\_\_\_\_  
What type of mask aligners did you use in the past? \_\_\_\_\_  
Do you know how to user ABM mask aligner? \_\_\_\_\_  
Do you have a process (recipe) for your samples? \_\_\_\_\_

#### 5. Electron beam lithography

What is the minimum feature size? \_\_\_\_\_  
What is the total area coverage of patterns on the samples? \_\_\_\_\_  
What type of e-beam resist do you like to use? \_\_\_\_\_  
What is the desired thickness of the ebeam resist? \_\_\_\_\_  
Is there requirement for alignment? \_\_\_\_\_  
If yes, what are the size of the alignment marks \_\_\_\_\_  
    What is the accuracy for the alignment \_\_\_\_\_

*For do-it-yourself only*

Do you have any prior experience with SEM? \_\_\_\_\_  
Do you have any prior experience for electron beam lithography? \_\_\_\_\_  
What type of lithography tool did you use? \_\_\_\_\_  
Do you know how to use JEOL 840? \_\_\_\_\_  
Do you know how to use NPGS EBL system? \_\_\_\_\_  
Do you know how to design patterns used by NPGS? \_\_\_\_\_  
Do you have a process (recipe) for your samples? \_\_\_\_\_

## 6. Thin film deposition

Do you need to deposit multilayers? \_\_\_\_\_

If yes, do you want to deposit these multilayers in the same vacuum run? \_\_\_\_\_

What type of materials do you want to deposit for each layer? \_\_\_\_\_

What is the thickness of each layer? \_\_\_\_\_

What is the vacuum requirement? \_\_\_\_\_

*For do-it-yourself only*

Do you have any prior experience with vacuum deposition system? \_\_\_\_\_

Do you know how to use Edwards 306 thermal evaporator? \_\_\_\_\_

## 7. Scanning Electron Microscopy/Energy Dispersive Spectrometer

What type of materials are the sample surface? Metals, ceramic, dielectric, polymers, biological materials ...? \_\_\_\_\_

Are these samples insulators or conductors? \_\_\_\_\_

Are these samples in the solid phase? \_\_\_\_\_

If not, then describe in more detail: \_\_\_\_\_

What are the feature size you want to see? \_\_\_\_\_

*For Energy Dispersive Spectrometer users only*

What elements do you want to detect? \_\_\_\_\_

What is the elemental resolution (%) requirement? \_\_\_\_\_

What is the spatial resolution requirement? \_\_\_\_\_

Is this a quantitative or qualitative measurement? \_\_\_\_\_

Is x-ray mapping required? \_\_\_\_\_

Is this a quantitative or qualitative mapping? \_\_\_\_\_

*For do-it-yourself only*

Do you have any prior experience with SEM? \_\_\_\_\_

What are the make and the model of these SEMs? \_\_\_\_\_

Do you have any prior experience with EDS? \_\_\_\_\_

What are the make and the model of these EDSs? \_\_\_\_\_

## 8. Atomic Force Microscopy/Magnetic Force Microscopy

What are the materials on the sample surface? Metals, ceramic, dielectric, polymers, biological materials ...? \_\_\_\_\_  
Are these samples insulators or conductors? \_\_\_\_\_  
Are these samples in the solid phase, liquid phase, suspension ...? \_\_\_\_\_  
What is the lateral feature size do you want to resolve? \_\_\_\_\_  
What is the height of features on the samples? \_\_\_\_\_  
What are the scan sizes (imaging areas)? \_\_\_\_\_

*For do-it-yourself only*

Do you have any prior experience with SPM? \_\_\_\_\_  
What are the make and the model of these SPMs? \_\_\_\_\_

## 9. Plasma etching/cleaning

What type of material do you want to etch/clean? \_\_\_\_\_  
How much of materials do you want etch/clean? \_\_\_\_\_  
What type of process gas do you need? \_\_\_\_\_

*For do-it-yourself only*

Do you have a recipe for plasma etching/cleaning? \_\_\_\_\_  
Do you have any prior experience with plasma etching/cleaning? \_\_\_\_\_  
What are the make and model of the plasma etching/cleaning tool you used? \_\_\_\_\_

## 10. Wet chemical etching

What type of materials do you want to etch? \_\_\_\_\_  
What type of chemicals do you need to use in order to etch above materials? \_\_\_\_\_  
How much materials (x/y/z) do you want to etch? \_\_\_\_\_  
What is the minimum feature size on the etch patterns? \_\_\_\_\_

*For do-it-yourself only*

Have you had a chemical safety training within a year? \_\_\_\_\_  
Do you know the properties of these chemicals? \_\_\_\_\_  
Do you know how to dispose the chemical waste? \_\_\_\_\_

## 11. Raman Spectrograph

What is the excitation wavelength requirement? \_\_\_\_\_  
What is the range of Raman shift you are interested in? \_\_\_\_\_  
What is the resolution requirement of the Raman spectrum? \_\_\_\_\_  
Do you need a polarized or non-polarized Raman? \_\_\_\_\_  
What are the sample sizes? \_\_\_\_\_  
Are these samples in the solid phase, liquid phase, gas phase, suspension ...? \_\_\_\_\_  
Do you have any idea how the spectrum would look like? \_\_\_\_\_  
Do you have a reference spectrum for these samples? \_\_\_\_\_  
Are your sample stable under laser beam (~ 1 mW on a 50 um diam. spot)? \_\_\_\_\_

## 12. Wafer dicing

What is the size of wafers? \_\_\_\_\_  
How thick are the wafers? \_\_\_\_\_  
What is the material of the wafers? \_\_\_\_\_  
Are there patterns/devices on these wafers? \_\_\_\_\_  
What are the dimensions of the diced chips? \_\_\_\_\_  
Do you want to dice through the whole thickness? \_\_\_\_\_  
How many wafers do you have.? \_\_\_\_\_

## 13. Surface profiling

What are the dimensions of the samples? \_\_\_\_\_  
What is the scan length? \_\_\_\_\_  
What is the feature size, or step height to be measured? \_\_\_\_\_

*For do-it-yourself only*

Do you have prior experience with surface profiling? \_\_\_\_\_  
What is the make and model of the profiling tool you used in the past?? \_\_\_\_\_

## 14. Cleanroom usage

Do you have prior experience working in a cleanroom? \_\_\_\_\_  
What is the purpose to use this cleanroom? \_\_\_\_\_