

# D-SIMS (Dynamic Secondary Ion Mass Spectrometry)

자기부채꼴 이차이온 질량분석기

Dynamic SIMS (Secondary Ion Mass Spectrometry) is the mass spectrometry of ionised particles which emitted when a surface is bombarded by energetic primary particles, usually ions. (for example,  $Ar^+$ ,  $Ga^+$ ,  $Cs^+$ ,  $O_2^+$ )

## Model

IMS-4FE7 (CAMECA, France)

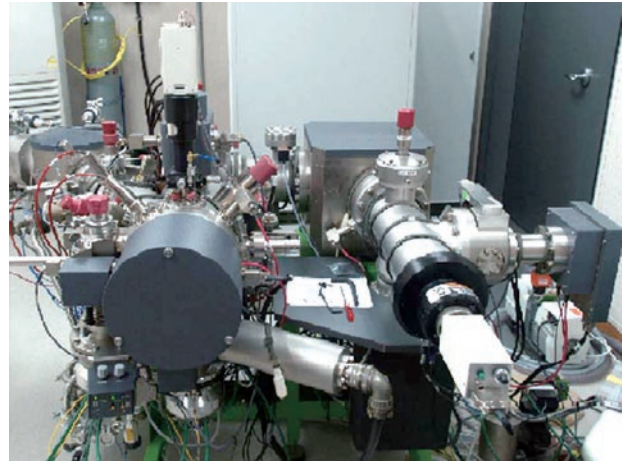
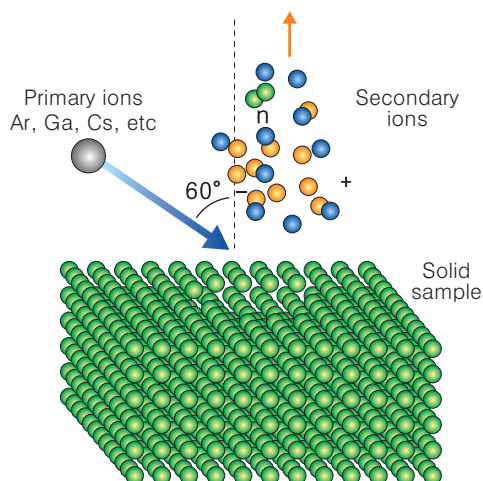
## Specifications

- Reactive primary ions :  $O_2^+$ ,  $Cs^+$
- Primary beam diameters
  - $O_2^+$  : 0.3 ~ 200  $\mu m$ , 0.5 ~ 8 keV
  - $Cs^+$  : 0.2 ~ 100  $\mu m$ , 1.6 ~ 14.5 keV
  - $MCs^+$  : down to 500 eV
- Control of incidence angle by pri./sec. voltage ratio
- Mass resolution M/dM: 300 ~ 25,000 (10 ~ 90%)
- Transmission : 40% at M/dM = 800
- Ion microscope and ion microprobe modes

## Applications

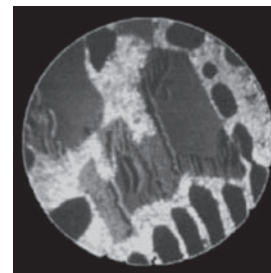
- Surface analysis : Most of the signal comes from the top 2-3 atomic layers
- Elemental analysis : Analysis of the full periodic table (from H to U and above)  
Typical detection limits from ppm to ppb
- Analysis of any solid samples insulator, semiconductor, conductive samples
- Isotope ratio
- 2D ~ 3D analysis

## Schematic diagram of secondary ion emission process

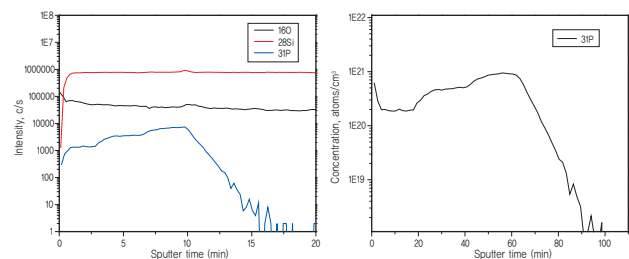


Location L5113F Tel.02-958-5984

## Ion image for Si inclusion in Al



## Depth profile for P doped silicon



## Depth profile for boron delta structure

