Fraunhofer CSP

FRAUNHOFER CENTER FOR SILICON PHOTOVOLTAICS CSP

1 *High resolution ICPMS.*

2 *Silicon samples.*

LOCALIZATION OF INORGANIC IMPURITIES IN SILICON SAMPLES

Fraunhofer Center for Silicon Photovoltaics CSP

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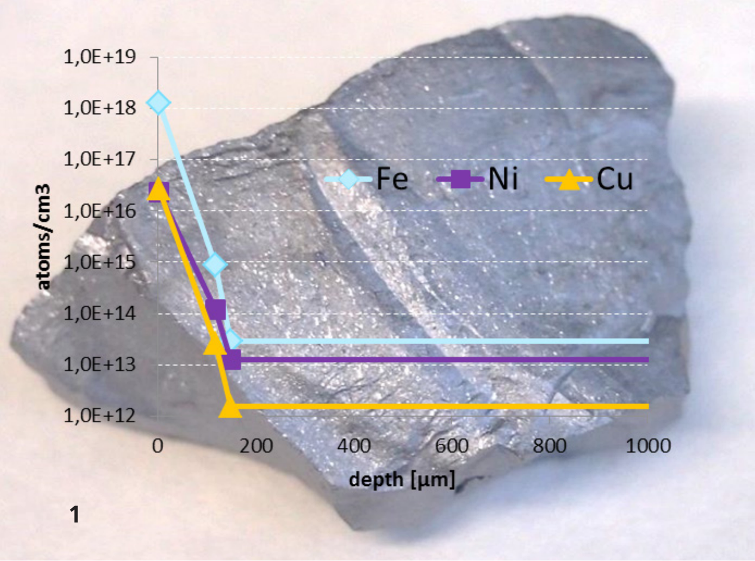
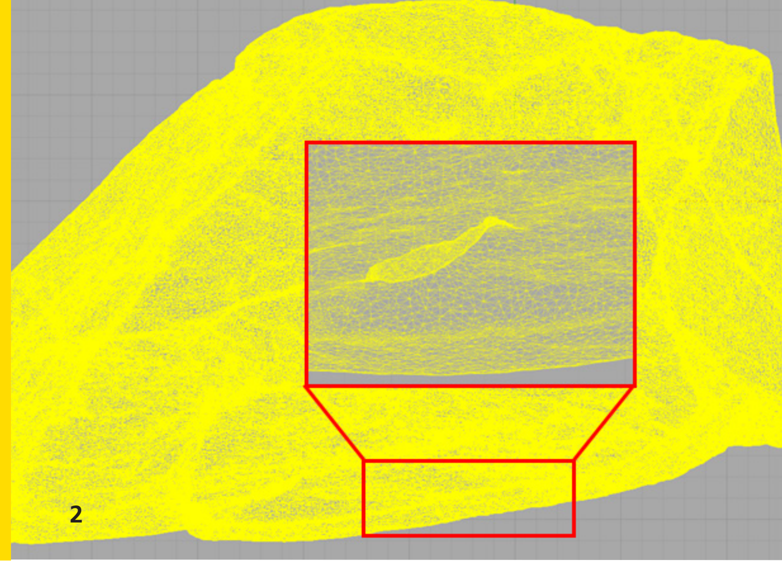
Surface, Sub-surface and Bulk

- Processing steps like cracking, grinding, sawing and milling cause severe contaminations at the surface which may diffuse into the bulk.
- Localized trace element analysis can answer the following questions:
  - Where are impurities localized in the material?
  - How can the material be purified?
  - Sequential etching and subsequent ICPMS analysis is a useful tool for layer dependent trace element analysis

Our Services

- Analytical service for silicon chunks, granules, powder, wafer etc.
- Quantitative determination of trace elements on the surface, within oxide and sub-oxide layers or bulk
- Customized method development
- Contamination evaluation of new process steps
- Specification of product quality





Advantages

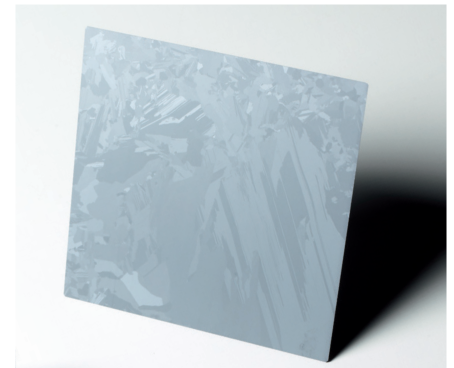
- Reliable and precise method for sequential etching
- High sensitivity
- Suitable for different degrees of purities / types of sample
- Adaptable to various kinds of samples according to question
- Useful tool to locate impurities and evaluate cleaning strategies

Further Information

- Wahl, S.; Meyer, S.; Hagendorf, C.: Localization of Inorganic Impurities in Silicon Samples by Sequential Etching and ICP-MS Detection, 6th International Conference on Silicon Photovoltaics, SiliconPV 2016
- Wahl, S.; Meyer, S.; Hagendorf, C.: Advanced Metal Contamination Analysis for High Efficiency Solar Cell Manufacturing, 6th International Conference on Silicon Photovoltaics, SiliconPV 2016

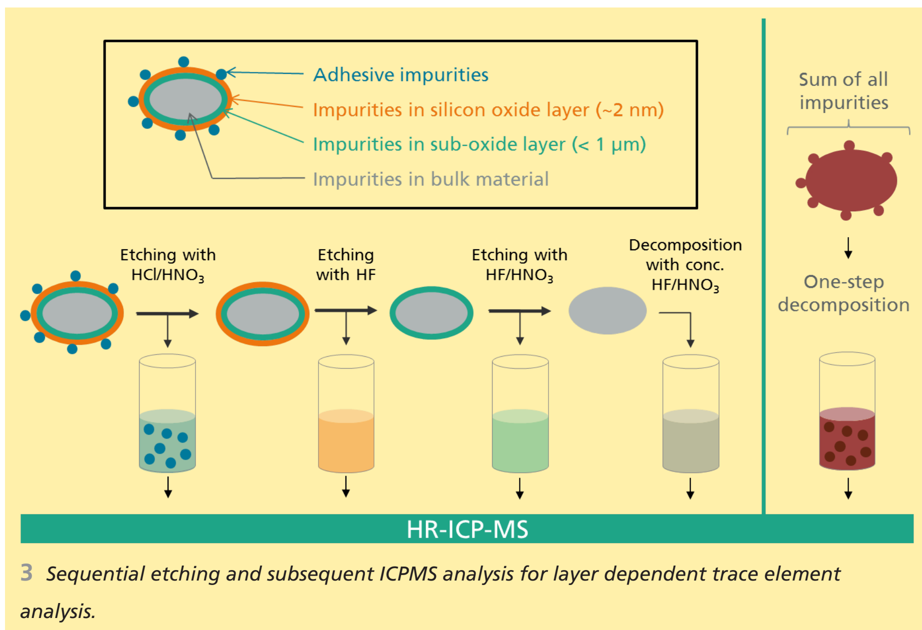
Granulate

Chunks



Wafers

Powder



3 *Sequential etching and subsequent ICPMS analysis for layer dependent trace element analysis.*

1 *ICPMS results: silicon chunk.*

2 *Determination of surface area by 3D scanning*