

Correlation of defect luminescence and recombination in mc-Si

A Code-RESI transnational activity

INES, 22. january 2015

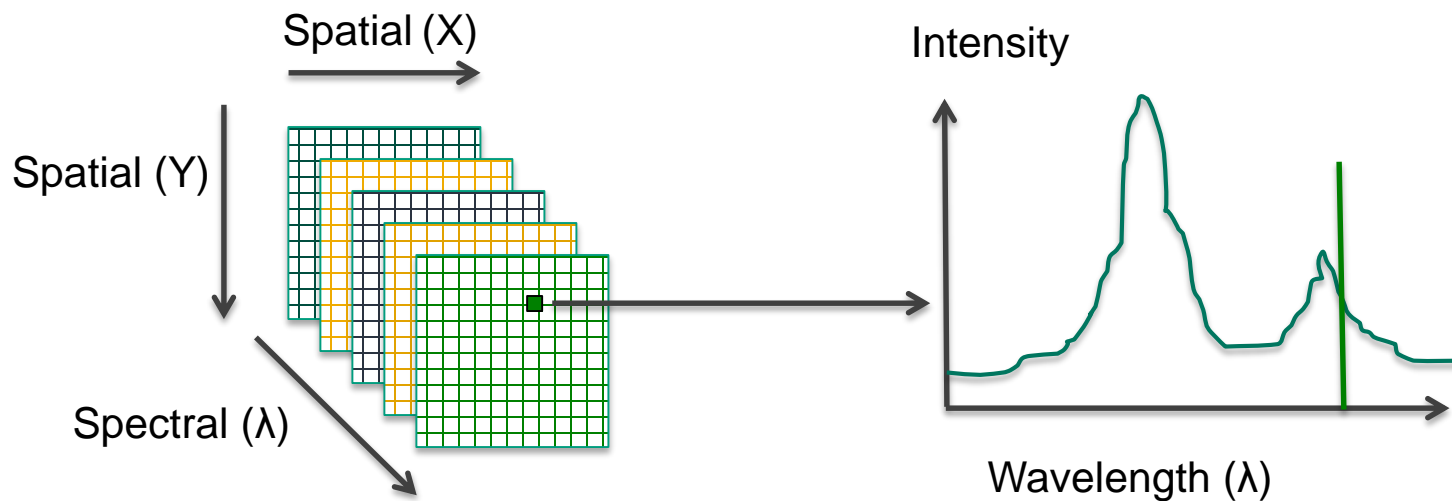
G.M. Wyller¹, F. Schindler², W. Kwapil² and E. Olsen¹

¹ NMBU, Ås, Norway, ² Fraunhofer-ISE, Freiburg, Germany

Purpose

- Combine two methods for characterization of materials
 - Conventional PL calibrated by QSSPL
 - Hyperspectrally resolved PL

Spectrally resolved photoluminescence



Aims of study

- Imaging distribution of Fe_i and FeB
- Study impact of processing on lifetime
 - P-gettering
 - Heat treatment
- p- and n-type materials

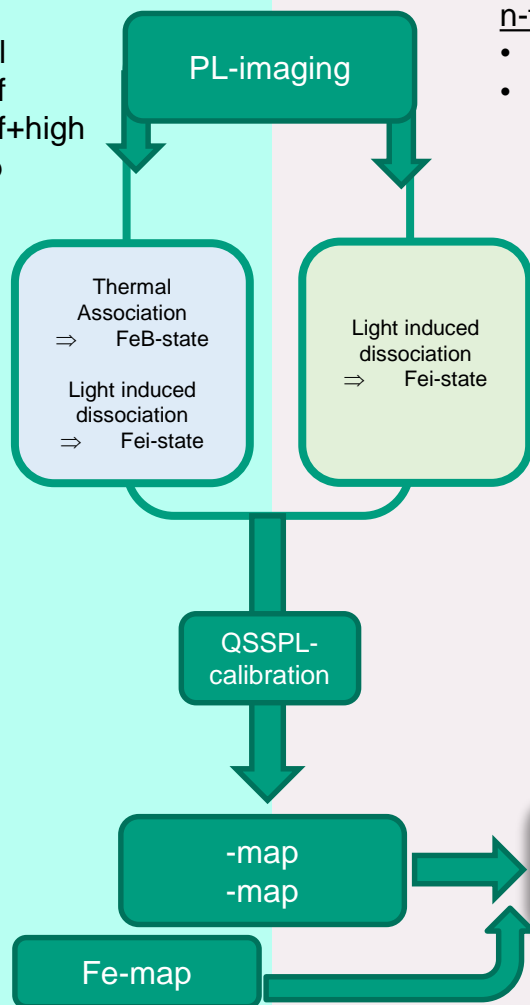
Conventional PL

p-type

- Initial
- P-diff
- P-diff+high temp

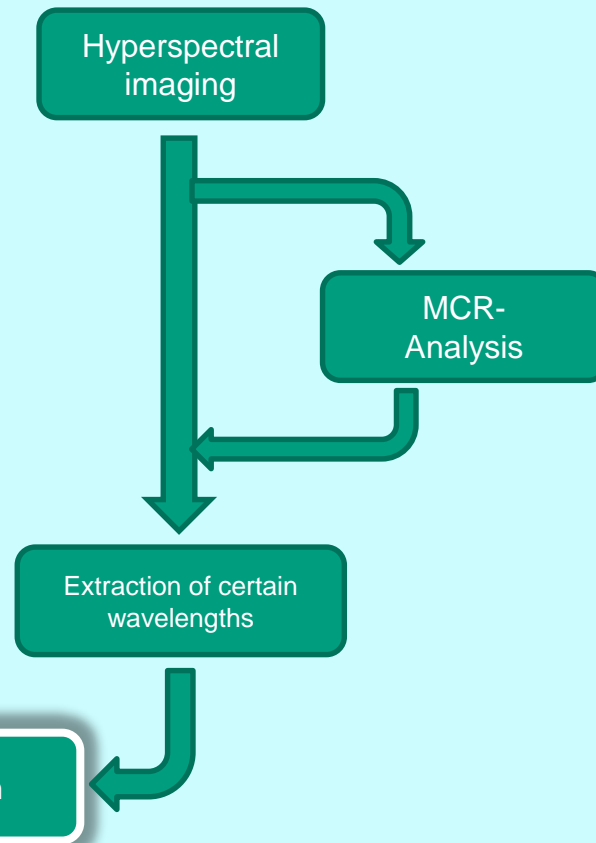
n-type

- Initial
- P-diff

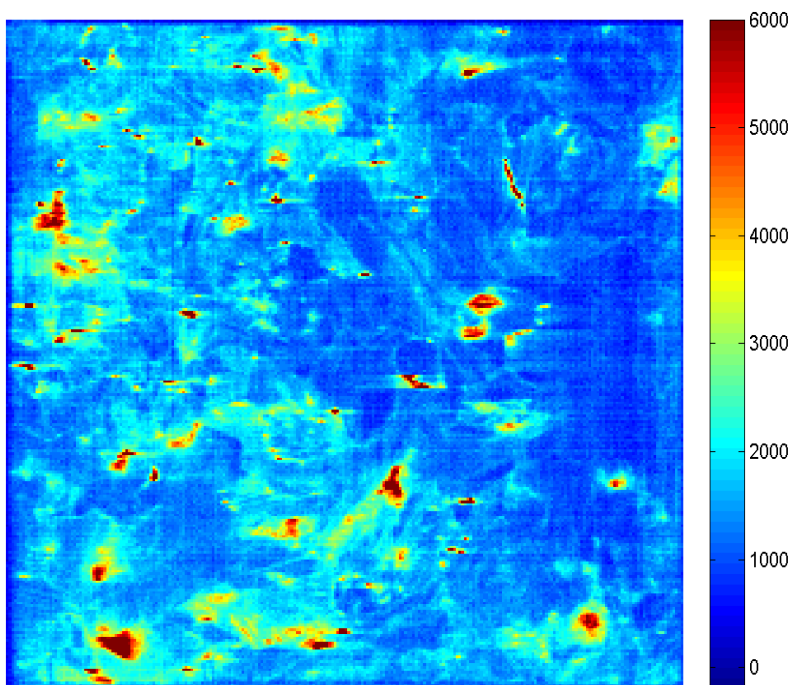


Spectral PL

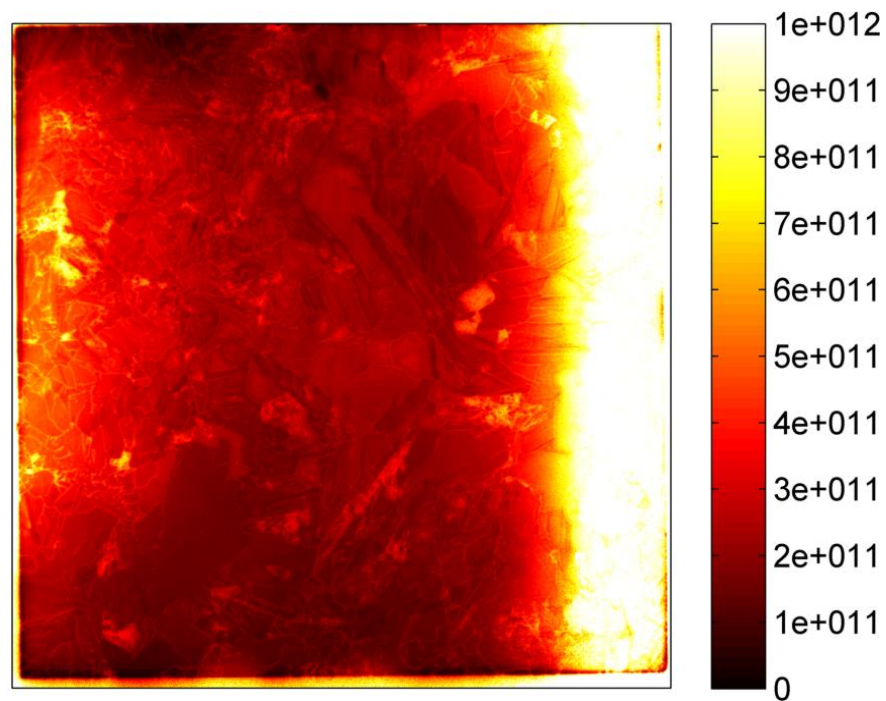
p-type & n-type



Defect sub-bandgap spectral PL
 NMBU
 0.73 – 0.92 eV



QSSPL-calibrated PL-imaging,
 Fraunhofer ISE
 Fe-map



Status

- QSSPL-calibrated PL finished at ISE in Freiburg
- Hyperspectral PL finished at NMBU, Ås
- Recorded data is being processed and investigated. The final report (thesis) is scheduled by May 15.