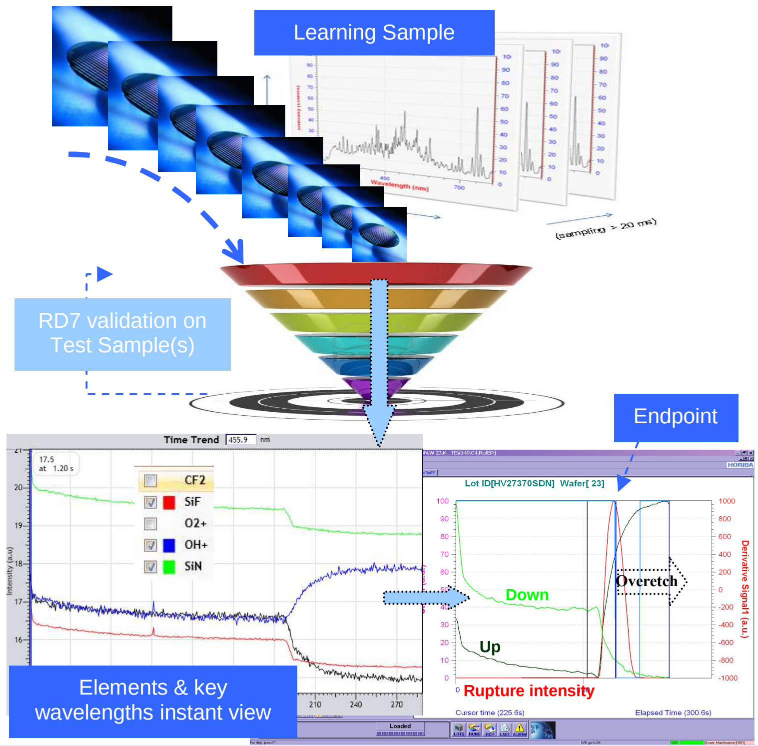
November 2013

RECIPE DESIGNER 7 V1.1

New

Automatic OES Endpoint Engineering Software: Dry Etch, Cleaning, PECVD



- **Give Better Life to Process Engineer!**
  - Plasma information is complex…
  - Recipe Designer 7 highlights Endpoint
  - Desktop software: build your recipe out of clean room
- **Engineering Toolbox for Plasma analysis**
  - Process understanding [Learning Sample(s)]
  - Process development
  - Instant Plasma Elements & by-Products Time Trend view
  - Automatic key Endpoint wavelength(s) extraction
- **Production Endpoint Recipe**
  - Semi-Automatic Endpoint Recipe creation
  - Endpoint validation [Tests sample(s)]

And more: Reprocessing, Signal Treatment, Statistics, Multi-Runs Viewer

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HORIBA
Scientific

JOBIN YVON
Technology

November 2013

New

Recipe Designer 7 Software

With Recipe Designer 7 (RD7) Evolution, OES Endpoint and Plasma Monitoring is made easy!

- **Dedicated to Process Engineer to develop and stabilize processes**
- **Unique Stand-alone Mathematical Software to plug in high-grade Real-time Sigma_P software within EV-140 products**
- EV-140 already contains full package for:
    - R&D Plasma Monitoring
    - Production
    - Single chamber & Cluster Tool
    - Automation inside Fab’s, Etching Tools

- **NOW, with Recipe Designer 7, EV-140 contains full package for IMMEDIATE ENGINEERING and PROCESS DEVELOPMENT:**
    - **Quick Highlight of relevant wavelengths or species kinetics**
    - **(quite) Automatic creation of Endpoint and Monitoring recipes**
    - **Spectra import from Sigma_P & Endpoint recipe export to Sigma_P**
- Developed with new technologies. Win 7 compliant

Plasma Information is complex, RD7 makes it clear !

2013 07 12 XETB 4

Learning Samples - up to 5
P1_03441_185027

Test Samples - up to 100
P1_03438_183135
P1_03441_185027
P4_02316_183317
P4_02319_185211
P2_02224_145857
P3_01895_145917

Status
Project open

Process target :
Etch Stop at Layer 1/ Layer 2 interface

Spectra View
1 spectrum every 25 ms : complex !

Wavelengths classification

Elements (Species) Time Trend

Immediate relevant Elements/Wavelengths time trend view

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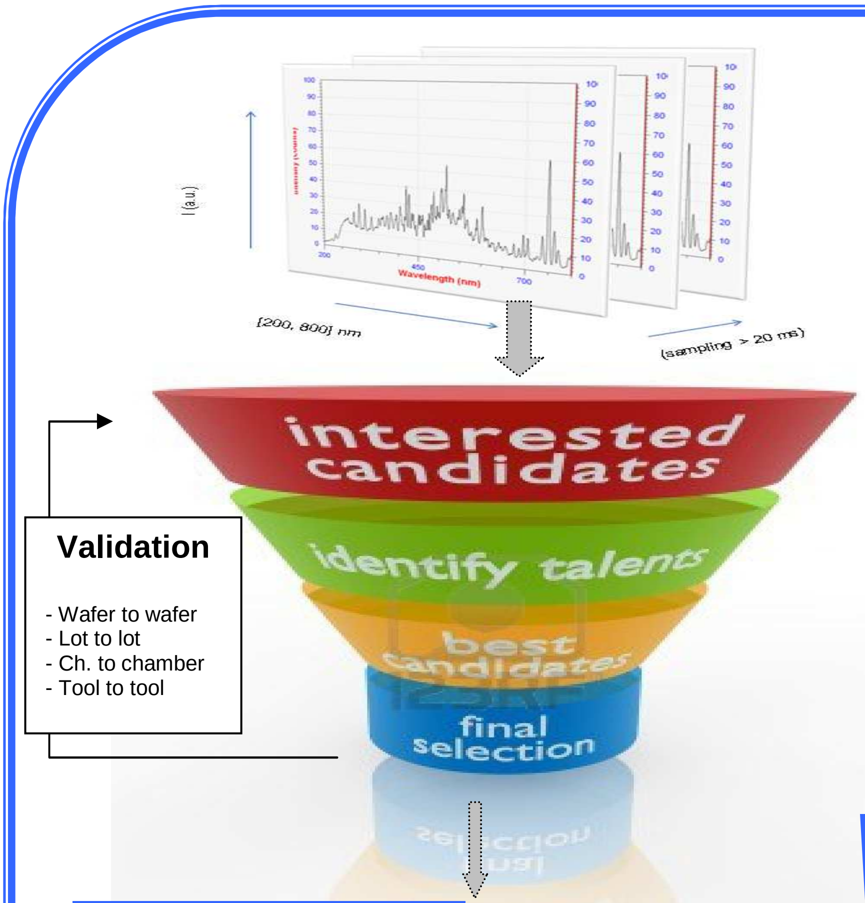


Validation

- Wafer to wafer
- Lot to lot
- Ch. to chamber
- Tool to tool

RD7 Flow to go from spectra to relevant process wavelengths

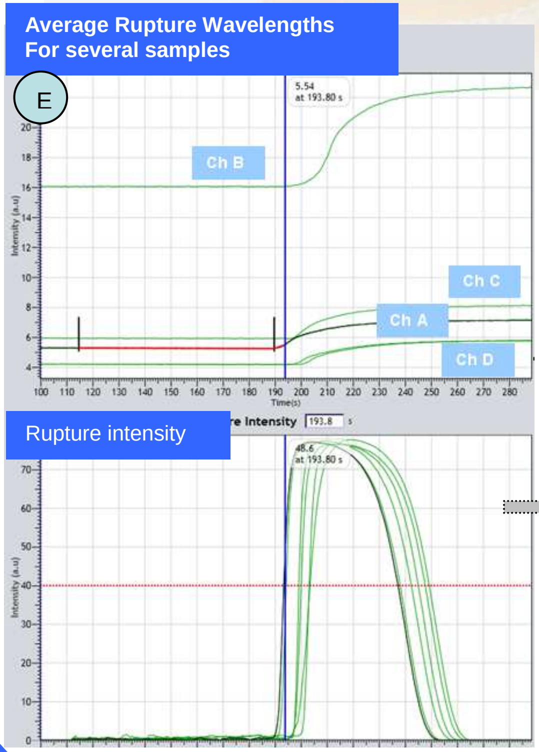
6 steps !

1. Create Project
2. Add runs in Database
3. Visualize runs
    - Spectra
    - Wavelengths
    - Elements
4. (Auto.) Classify Wavelengths
5. (Auto.) Find Rupture points
    - Up Slope
    - Down Slope
6. Lock Endpoint detection rules
    - Export recipe to Sigma_P

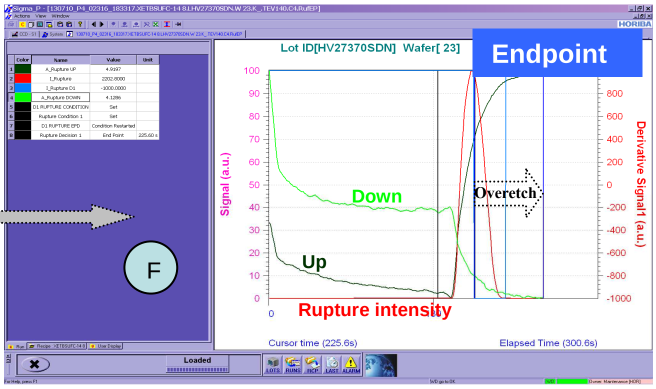
One Click actions !

Average Rupture Wavelengths For several samples

Rupture intensity



Sigma_P final recipe


Sigma_P - [130710_P4_02316_183317.XETBSUFC-14 8.LHV27370SDN.W 23.K_.TEV140.C4.RufEP]

	Color	Name	Value	Unit
1		A_Rupture UP	4.9197	
2		I_Rupture	2202.8000	
3		I_Rupture D1	-1000.0000	
4		A_Rupture DOWN	4.1286	
5		D1 RUPTURE CONDITION	Set	
6		Rupture Condition 1	Set	
7		D1 RUPTURE EPD	Condition Restarted	
8		Rupture Decision 1	End Point	225.60 s

Lot ID[HV27370SDN] Wafer[23]

Cursor time (225.6s)

Elapsed Time (300.6s)

And more: - Reprocessing - Signal treatment – Statistics - Multi-runs Viewer…

RD7 is compatible with:

- previous products like PlasmaScope, DigiCPM, DigiCPM_J, MultiCPM
- EV-140 C, EV1000
- Other spectra formats on demand

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