EP-Replayer Data replay for predictive End Point and process optimisation

OVERVIEW

Hiden EP-Replayer allows IMP-EPD users to playback previous etch data to help create and optimise End Point recipes. Users can define variables in the algorithmic recipe template, then replay the data and watch in real-time to see the precise expected End Point for the given data and parameters. As with a live data acquisition, the Events Log records timestamps, state changes and key count rates, and the Chart Marker graph displays the End Point progress. The EP-Replayer gives users the freedom to test different End Point methods and more advanced recipe template features, with minimal wafer consumption, to build a more robust, repeatable and cost-effective etch process.

FEATURES



- Real-time reprocessing of previous etch data
- End Point calculated and displayed in MASsoft
- Optimise recipes from one initial etch
- Trial more advanced End Point methods and algorithm features
- Reduce risk of failed End Points and scrapped wafers
- Adjust End Point parameters and replay to troubleshoot without additional etches



EP-Replayer scan: Replay mode used to test and optimise a third layer End Point





- Easily convert MASsoft data to compatible Replay files
- Simple control via Hiden's HAL10 Web UI
- Can be used with current HAL10 IMP-EPD installations
- Can run independently from the etch tool
- Intuitive adjustment of End Point recipes within MASsoft

16:36:58	Prepare for scan
16:36:59	Not using live data
16:36:59	Monitor started
16:37:02	Step 1 started at:
16:37:05	End of initial delay.
16:38:04	(Chart mark) State = 1 (Rising: Above slope) at 65.145s : Peak height 1380 c/s
16:38:26	(Chart mark) State = 3 (Above limit and %fall) at 84.514s : Peak height 20560 c/s
16:38:39	(Chart mark) State = 6 (Below %fall, above limit) at 98.247s : Peak height 22150 c/s
16:38:40	End of layer # 1
16:38:40	(Chart mark) State = 0 (Between peaks/layers) at 101.775s : Peak height 18510 c/s
16:38:48	(Chart mark) State = 1 (Rising: Above slope) at 107.384s : Peak height 13610 c/s
16:38:57	(Chart mark) State = 2 (Rising: above limit) at 115.779s : Peak height 32720 c/s
16:39:04	(Chart mark) State = 3 (Above limit and %fall) at 126.172s : Peak height 48340 c/s
16:39:25	(Chart mark) State = 6 (Below %fall, above limit) at 146.774s : Peak height 42310 c/s
16:39:30	End of layer # 2
16:39:30	(Chart mark) State = 0 (Between peaks/layers) at 151.356s : Peak height 31680 c/s
16:39:41	(Chart mark) State = 1 (Rising: Above slope) at 160.058s : Peak height 14470 c/s
16:39:50	(Chart mark) State = 2 (Rising: above limit) at 171.214s : Peak height 34160 c/s
16:39:57	(Chart mark) State = 3 (Above limit and %fall) at 178.845s : Peak height 48190 c/s
16:40:18	Overetch started at 198.439s : Peak height 47120 c/s
16:40:24	End of overetch at 203.514 s
16:40:24	198.439s endpoint found .
16:40:24	5.000s overetch .
16:40:32	Cleanup started
16:40:32	206.832s - Run ended .

Event log: Real-time Event logging with Replay mode indicated

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Mass spectrometers for vacuum, gas, plasma and surface science

End Point Detector for Ion Beam Etch

OVERVIEW

The IMP-EPD is a differentially pumped, ruggedised secondary ion mass spectrometer for the analysis of secondary ions and neutrals from the ion beam etch process. The system includes integrated software with process specific algorithms developed for optimum process control.

The IMP-EPD system is process proven for the production of high specification thin film devices for applications including magnetic thin films, high temperature superconductors and III-V semiconductors.

END POINT CONTROLS

- Rising and falling edge algorithms
- Layer counting for End Point on a selected interface in a multilayered stack
- End Point relative to a reference peak
- Automatic signal correction due to wafer rotation



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- Automatic End Point Detection
- High resolution End Point, down to < 0.5 nm
- Ruggedised for Processing
- High sensitivity SIMS analysis
- Integrated residual gas analyser mode for process chamber vacuum diagnostics



MASsoft Scan: Multilayer wafer etch displayed in MASsoft

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