

Single Wafer Wet Etch Processing

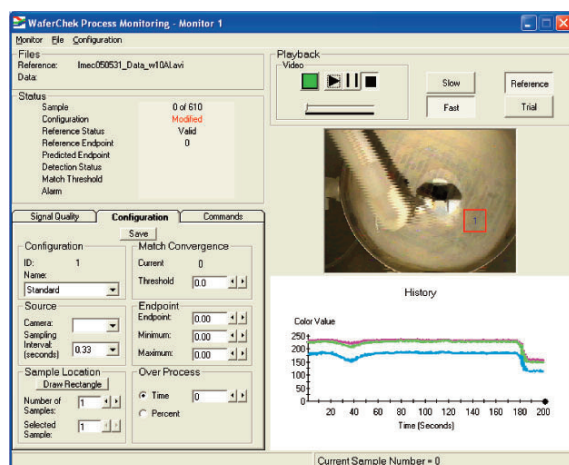
Aluminum Wet Etch

Veeco's single wafer etch technology provides a highly uniform aluminum wet etch process, with dry-in/dry-out operation, and resulting in low particle counts. As a sequential process, it can both perform the aluminum etch and remove processing residue. In-situ process monitoring ensures complete aluminum etch with minimum undercut.

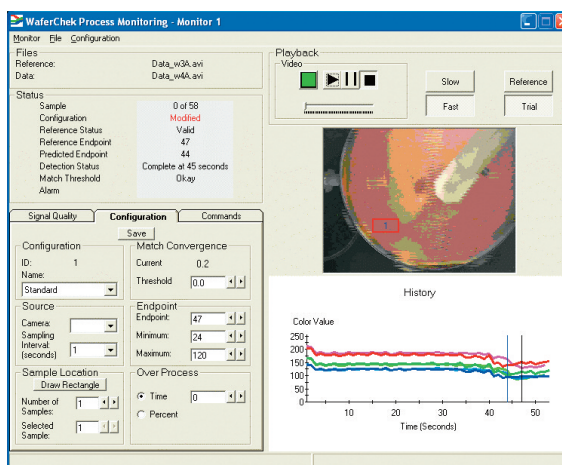
System processing features include:

WaferChek™ In-situ Adaptive Process Control

The phosphoric acid etch process is monitored and managed on each individual wafer in real time. For example, if an etch rate changes due to chemistry temperature or concentration, the WaferChek system automatically changes the dispensing time so that the same etch will be achieved on each wafer.



The WaferChek monitor generates a data curve that is utilized as a reference for subsequent wafers to be etched. In this example, it is clear to see the aluminum layer being etched and then the transition to the finished etch at 180-185 seconds.



The process monitor will track the underlying titanium layer etch, as well. Both the reference data and the trial data are shown in bold color. The software correctly identifies the endpoint at 44 seconds compared to the programmed endpoint of 47 seconds for the reference data.

PC Programmable, On-the-fly Temperature Control

All chemistry temperature is recipe-driven, with typical temperatures for Al etch 20-70 °C. With the chemistry flowing constantly through the system, the temperature is stabilized. The heat exchanger holds temperature to $\pm 1^\circ\text{C}$.

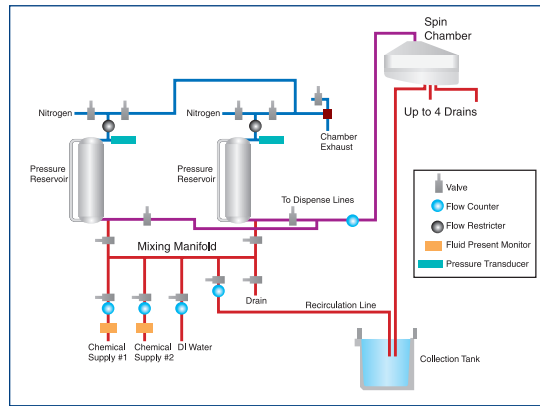
Using a phosphoric acid etch, either CMOS grade, 85% undiluted or as a major component of phosphoric acid/acetic acid/nitric acid/DI mixtures, etch rates are achieved as shown to the right.

Temp. (°C)	Etch Rate (Å/min)
20	500
30	1,000
40	2,250
50	5,000
60	10,000
70	20,000



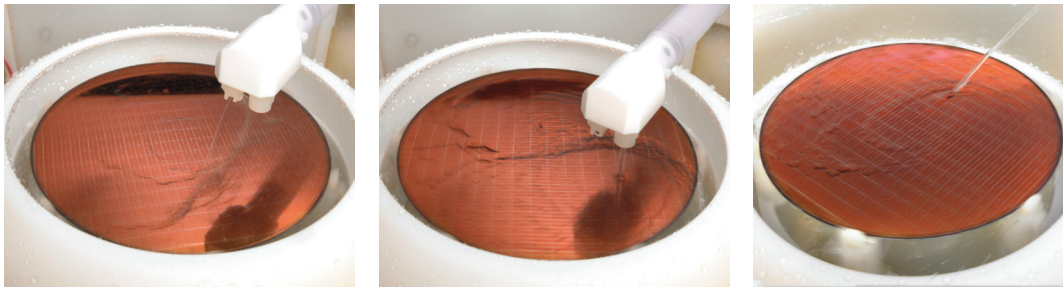
PC Programmable Chemical Blending

PC programmable, recipe-specific, chemical blending and phosphoric acid recirculation enable use of concentrate, minimizing consumption. Systems may be configured to provide multiple phosphoric concentrations for different etch rates.



PC Programmable Chemistry Recirculation

For longer process times, recirculation of chemistry using Veeco's exclusive pressure- and vacuum-driven chemical movement, in-line filtration with pressure transducers, and programmable maintenance counters and spiking, minimizes per-wafer phosphoric acid consumption. Multiple recirculation systems may be configured for separate phosphoric concentrations, temperatures, and flows.



Veeco's Patent Pending collection cup is a programmable system which precisely controls the collection of fluids during processing. A simple gravity drain system avoids hygroscopic action on chemistry.

With **42 years of experience** in processing technology,
we will find the solution that is right for you.
Contact Veeco for any wafer wet processing requirement.



Veeco 3300 systems may be scaled to your process requirements, with multiple parallel processing modules to match longer cycle time aluminum etch processes.



Learn more about Veeco's single wafer process capabilities at www.veeco.com/PSP

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Precision Surface Processing