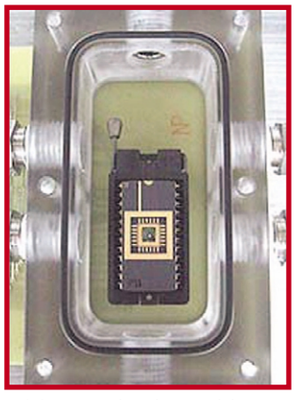
Hot SiC MEMS microchip for micro analysis

Boston MicroSystems has developed a MEMS chip that can go from zero to 1,100°C in a thousandth of a second, with silicon carbide playing a central role as micro hotplates.



Miniature, polycarbonate laboratory that houses the micro hotplates. The hotplate is visible as a minute, gold-colored speck in the centre of the chamber. Credit: Boston Microsystems Inc and the National Science Foundation

Silicon carbide is not only stable at high temperatures, it is also impervious to chemical attack from most materials.

As a result, the hotplates can be cleaned by burning debris off the surface. The micro hot plates, which measure on average 100x100nm, can reach higher temperatures much faster than existing tiny heating units, and are more robust and less prone to failure, according to president and co-founder Rick Mlcak.

Contained on a microchip, the 'labs' reside within a polycarbonate chamber that can endure near-vacuum pressures. Ports on the chamber's sides allow gases to pass through and feed experiments. Because of the chamber's transparency, researchers can observe experiments by microscope as they progress.

Researchers may be able to use this to study chemical interactions that prove difficult to produce. Semiconductor designers, for instance, layer chemicals onto wafers by heating the wafer in a chamber to several hundred degrees Celsius, dispersing a metallic vapour, and cooling the chamber to let the metal adhere. This heat:cool process is time consuming. With Boston MicroSystems' hot plates, a section of a wafer can be heat:cooled so researchers can study more interactions.

The chip is sculpted out of a sliver of silicon carbide. The small channel heating coils, are carved out of the centre of the chip by lithography, sitting below the surface of the chip.

The heating area is suspended by four tethers that are part of the original wafer.

Boston MicroSystems has made hot-plate chips ranging from 43-128 microns on a side.

The six-employee Boston company has also created a heating unit that contains four of the hot plates in a 2x2 array.

Small footstep for Agilent's Signal Source Analysis

Agilent Technologies Inc's R5052A Signal Source Analyser can evaluate the critical performance characteristics of nearly all types of RF, microwave signal sources, replacing a large, complex rack of test equipment with one unit that speeds measurements by a factor of 10.

"3G and 4G wireless standards are increasing the complexity of testing and evaluating signal sources," says Pat Byrne, GM and VP of Agilent's RF & MW Communications Business unit. "The introduction of the signal source analyser, a new class of instrument, is a result of continued effort to provide innovative products that simplify and speed the test process."

The SSA claims to test more signal sources than any other single instrument available, including crystal oscillators, VCOs, SAW oscillators, DROs, YIG-tuned oscillators, all types of frequency synthesisers, and local oscillator circuits. The instrument measures phase noise, modulation domain (frequency, power and phase transient), power, frequency and DC current consumption, and provides a spectrum monitor function and two ultra-low noise DC sources for a device under test (DUT).

It offers a phase-noise frequency offset range of 1Hz to 40MHz. For transient measurements, the SSA offers frequency resolution ranges from 5Hz to 7kHz with 10ns to 160ms sampling resolution, and frequency span can be selected between 1.6MHz-25.6MHz in the heterodyne (narrowband) mode. The instrument also has a direct (wideband) mode for frequency transients up to 4.8 GHz span.

Price begins at $75,000.

Users push Linux towards RF design software

RF designers have been pushing RF, microwave and wireless electronics design software into Linux, writes Mary Webb at NewsForge. Advanced Wave Research Inc, a developer of RF, microwave, and wireless electronics design software. found potential customers asking, "What about Linux?"

"They were saying, 'Come back when you're on Linux and we'll talk,' executive VP, Dane Collins of AWR is quoted as saying about a gatekeeper issue, keeping AWR from business.

Although most of AWR's 400 customers have Windows-based engineering processes from design to productions, *their* customers on Unix won't go to a completely Windows workflow, citing security as their main reason.

Companies did not want to do the design on Windows, then run the rest of the process on Unix, but wanted a single, or at least highly compatible, platform. Linux was close enough. AWR considered a Linux port, looking at a traditional port, or leveraging open source code and not porting at all. But it was felt that the port would not be maintainable. Developers could port a specific version, but with a six-month lifecycle, didn't feel that Linux development could be sustained. The final option was to use open source technology to boost the Windows application onto Linux.

"With WINE [Windows Open Source implementation] of the API on top of X and Unix, we could find out quickly if it was practical," Collins said. "We found CodeWeavers and within two weeks were able to get [our application] up." Within a couple months the company had 90% of the application running well. According to Collins, they've been working towards 100% functionality ever since.

Source:http://os.newsforge.com/os/ and http://www. codeweavers.com