CLAIMS

What is claimed is:

1. A device for thermal testing one or more exposed or covered dies of an integrated circuit, comprising:

a pedestal; and

a heatlet attached to a first end of the pedestal, the heatlet comprising:

a face comprising one or more plates, wherein the one or more plates are configured to match a geometry of the one or more dies;

heating circuitry comprising layers of heating circuits and configured in operation to heat the one or more plates of the face; and

sensing circuitry comprising layers of sensing circuits and configured in operation to sense a temperature of the heatlet.

2. The device of claim 1, wherein the heatlet comprises a ceramic heatlet.

3. The device of any one of the preceding claims, wherein at least one of the layers of heating circuits comprises a plurality of individually controllable heating zones, and wherein each of the plurality of individually controllable heating zones is configured to control a temperature in a corresponding one of the one or more plates of the face.

4. The device of claim 3, further comprising one or more grooves disposed between the plurality of individually controllable heating zones.

5. The device of claim 3 or claim 4, wherein at least one of the layers of sensing circuits comprises a plurality of temperature sensors, each of the plurality of temperature sensors corresponding to one of the plurality of individually controllable heating zones.

6. The device of any one of the preceding claims, wherein the pedestal comprises copper.

7. The device of claim 6, wherein the pedestal further comprises plastic.

8. The device of any one of the preceding claims, further comprising a plurality of clamps disposed on the pedestal for attaching the heatlet to the first end of the pedestal.

9. The device of any one of the preceding claims, further comprising one or more openings in the heatlet configured in operation to permit injection of a first liquid layer between the face of the heatlet and the one or more dies.

10. The device of any one of the preceding claims, further comprising a second liquid layer disposed between the heatlet and the pedestal.

11. The device of any one of the preceding claims, further comprising a graphite plate disposed between the heatlet and the pedestal.

12. The device of any one of the preceding claims, wherein the pedestal comprises a cooling element.

13. A thermal tester for testing one or more exposed or covered dies of an integrated circuit on a testing platform, comprising:

an adapter configured to match a geometry of the testing platform;

a heatlet attached to a first end of the adapter, the heatlet comprising:

a face comprising one or more plates, wherein the one or more plates are configured to match a geometry of the one or more dies;

heating circuitry comprising layers of heating circuits and configured in operation to heat the one or more plates of the face; and

sensing circuitry comprising layers of sensing circuits and configured in operation to sense a temperature of the heatlet; and

a communication interface configured in operation to receive a command for thermal testing the one or more dies.

14. The thermal tester of claim 13, wherein the heatlet comprises a ceramic heatlet.

15. The thermal tester of claim 13 or claim 14, further comprising a control interface configured in operation to provide a feedback from the sensing circuitry.

16. The thermal tester of claim 15, wherein at least one of the layers of heating circuits comprises a plurality of individually controllable heating zones, and wherein each of the plurality of individually controllable heating zones is configured to control a temperature in a corresponding one of the one or more plates of the face.

17. The thermal tester of claim 16, further comprising one or more grooves disposed between the plurality of individually controllable heating zones.

18. The thermal tester of claim 16 or 17, wherein at least one of the layers of sensing circuits comprises a plurality of temperature sensors, each of the plurality of temperature sensors corresponding to one of the plurality of individually controllable heating zones.

19. The thermal tester of claim 18, wherein the layers of heating circuits and the plurality of individually controllable heating zones of the at least one of the layers of heating circuits are coupled to the communication interface, and wherein the communication interface is configured in operation to activate at least a portion of the layers of heating circuits and/or the plurality of individually controllable heating zones of the at least one of the layers of heating circuits in response to the communication interface receiving the command for thermal testing the one or more dies.

20. The thermal tester of claim 19, wherein the layers of sensing circuits and the plurality of temperature sensors of the at least one of the layers of sensing circuits are coupled to the control interface, and wherein, in operation, at least a portion of the layers of sensing circuits and/or the plurality of temperature sensors of the at least one of the layers of sensing circuits corresponding to the at least a portion of the layers of heating circuits and/or the plurality of individually controllable heating zones of the at least one of the layers of heating circuits are activated in response to the command for thermal testing during operation to provide sensing signals to the control interface to provide the feedback from the sensing circuitry.

21. The thermal tester of any one of claims 13 to 20, wherein the adapter comprises a pedestal comprising copper.

22. The thermal tester of claim 21, wherein the pedestal further comprises plastic.

23. The thermal tester of any one of claims 13 to 22, further comprising a plurality of clamps disposed on the adapter for attaching the heatlet to the first end of the adapter.

24. The thermal tester of any one of claims 13 to 23, further comprising one or more openings in the heatlet configured in operation to permit injection of a first liquid layer between the face of the heatlet and the one or more dies.

25. The thermal tester of any one of claims 13 to 24, further comprising a second liquid layer disposed between the heatlet and the adapter.

26. The thermal tester of any one of claims 13 to 25, further comprising a graphite plate disposed between the heatlet and the adapter.

27. The thermal tester of any one of claims 13 to 26, further comprising a cooling element disposed at a second end of the adapter opposite the first end of the adapter, wherein the cooling element comprises at least one of a cooling plate, a third liquid layer and an air layer.

28. The thermal tester of any one of claims 13 to 26, wherein the adapter comprises a cooling element.

29. The thermal tester of any one of claims 13 to 28, further comprising a power interface coupled to the heating circuitry and configured in operation to receive power from the testing platform.