CLAIMS

What is claimed is:

1. An apparatus, comprising:

a temperature sensor configured to be disposed with a stove cooktop, the temperature sensor maintaining contact with a cookware on the stove cooktop during operation of the stove cooktop; and

a heater configured to heat the temperature sensor to a temperature setpoint for the stove cooktop before the cookware is heated by the stove cooktop.

2. The apparatus of claim 1, wherein:

the temperature sensor is included within a heat flux sensor system that is configured to detect a heat flux magnitude and a direction during operation of the stove cooktop.

3. The apparatus of claim 1, wherein the temperature sensor is a first temperature sensor and included within a heat flux sensor system, the apparatus further comprising:

a second temperature sensor disposed a non-zero distance from the first temperature sensor,

the heat flux sensor system configured to detect a difference between a temperature measured at the first temperature sensor and a temperature measured at the second temperature sensor.

4. The apparatus of claim 1, wherein the temperature sensor is a first temperature sensor, the apparatus further comprising:

a second temperature sensor disposed a non-zero distance from the first temperature sensor and thermally isolated from the cookware,

a heat flux magnitude based on a difference between a temperature measured at the first temperature sensor and a temperature measured at the second temperature sensor.

5. The apparatus of claim 1, wherein:

the heater is configured, after heating the temperature sensor to the setpoint temperature, to intermittently stop power to the temperature sensor,

the temperature sensor is included within a heat flux sensor system that is configured to detect a heat flux magnitude based on a difference between a temperature measured at the temperature sensor at a first time and a temperature measured at the temperature sensor at a second time after the first time.

6. The apparatus of claim 1, wherein:

the heater is configured, after heating the temperature sensor to the setpoint temperature, to intermittently stop power to the temperature sensor,

a heat flux magnitude based on a difference between a temperature measured at the temperature sensor at a first time and a temperature measured at the temperature sensor at a second time after the first time.

7. The apparatus of claim 1, further comprising:

a compliant member coupled to the temperature sensor and configured to maintain contact with the cookware on the stove cooktop as the cookware is heated by the stove cooktop, the compliant member includes at least one of a plunger assembly or a compliant bumper.

8. The apparatus of claim 1, further comprising:

a movable plunger;

a fixed plunger support; and

a spring disposed between the plunger and the plunger support,

the movable plunger, the fixed plunger support and the spring collectively coupled the temperature sensor and configured to maintain contact with the cookware on the stove cooktop as the cookware is heated by the stove cooktop.

9. A method, comprising:

heating a temperature sensor disposed with a stove cooktop to a setpoint temperature for the stove cooktop; and

detecting, via at least the temperature sensor, a heat flux direction and a heat flux magnitude associated with cookware on the stove cooktop.

10. The method of claim 9, wherein:

the temperature sensor is a first temperature sensor, and

detecting includes detecting the heat flux magnitude based on a difference between a temperature measured at the first temperature sensor and a temperature measured at a second temperature sensor disposed a non-zero distance from the first temperature sensor.

11. The method of claim 9, wherein:

after heating the temperature sensor to the setpoint temperature, intermittently stopping power to the temperature sensor; and

detecting the heat flux magnitude based on a difference between a temperature measured at the temperature sensor at a first time and a temperature measured at the temperature sensor at a second time after the first time.

12. The method of claim 9, wherein a change in the heat flux direction indicates the cookware on the stove cooktop reaching the setpoint temperature during operation of the stove cooktop.

13. The method of claim 9, wherein the cookware on the stove cooktop approaches the setpoint temperature during operation of the stove cooktop when the heat flux magnitude approaches from a positive value to a zero value.

14. The method of claim 9, wherein the cookware on the stove cooktop reaches the setpoint temperature during operation of the stove cooktop when the heat flux magnitude switches from a first value that represents the temperature sensor being heated by the heater to a second value that represents the temperature sensor being passively heated by contact with the cookware.

15. An apparatus, comprising:

a temperature sensor configured to be disposed with a stove cooktop, the temperature sensor maintaining contact with a cookware on the stove cooktop during operation of the stove cooktop and while the cookware is on the stove cooktop;

a heater configured to heat the temperature sensor; and

a heating element controller of the stove cooktop operatively coupled to the temperature sensor, the heater, and a stove element of the stove cooktop,

the heating element controller configured to control a stove element of the stove cooktop to heat the cookware during operation of the stove cooktop, the heating element controller having:

(1) a first control loop to maintain one of (a) the temperature sensor at a setpoint temperature via the heater or (b) the stove element at a power, and

(2) a second control loop to modulate one of (a) a power of the stove element to heat the cookware to the setpoint temperature or (b) a power of the heater to cause the temperature sensor to measure the heat flux magnitude approaching a zero value, respectively.

16. The apparatus of claim 15, wherein the first control loop is configured to prioritize response time over accuracy, the second control loop is configured to prioritize accuracy over response time.

17. The apparatus of claim 15, wherein the second control loop is configured to modulate power to the stove element to heat the cookware modulating at least one of an amplitude, a duty cycle or a frequency of the power of the stove element.

18. The apparatus of claim 15, wherein the heating element controller does not have access to data associated with the thermal response of the cookware.

19. The apparatus of claim 15, wherein the heating element controller has access to data associated with the thermal response of the cookware.

20. The apparatus of claim 15, wherein the stove element is a coil, and the stove cooktop is an induction stove.