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(54) **TRANSMISSION-BASED TEMPERATURE MEASUREMENT OF A WORKPIECE IN A THERMAL PROCESSING SYSTEM**

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(57) **ABSTRACT**

A thermal processing system for performing thermal processing can include a workpiece support plate configured to support a workpiece and heat source(s) configured to heat the workpiece. The thermal processing system can include window(s) having transparent region(s) that are transparent to electromagnetic radiation within a measurement wavelength range and opaque region(s) that are opaque to electromagnetic radiation within a portion of the measurement wavelength range. A temperature measurement system can include a plurality of infrared emitters configured to emit infrared radiation and a plurality of infrared sensors configured to measure infrared radiation within the measurement wavelength range where the transparent region(s) are at least partially within a field of view the infrared sensors. A controller can be configured to perform operations including obtaining transmittance and reflectance measurements associated with the workpiece and determining, based on the measurements, a temperature of the workpiece less than about 600° C.