CLAIMS

1. A residual chemical reaction diagnostic device, comprising:

   a substrate;

   a material stack over the substrate; and

   a residual chemical reaction sensor patterned from the material stack, wherein the residual chemical reaction sensor comprises:

   a first probe pad with a first sidewall that extends an entire height of the material stack; and

   a second probe pad with a second sidewall that extends an entire height of the material stack, wherein the residual chemical reaction sensor provides electrical outputs in response to the presence of residual chemical reactions.

2. The residual chemical reaction diagnostic device of claim 1, wherein the substrate is a device substrate, wherein the sensor is formed in a scribe line of the device substrate, and wherein the sensor is formed in parallel with the active devices on the device substrate, and wherein the sensor includes the same materials as the active devices.

3. The residual chemical reaction diagnostic device of claim 1, wherein the substrate is a process development substrate.

4. The residual chemical reaction diagnostic device of claim 1, wherein the residual chemical reaction sensor comprises:

a plurality of first arms extending out from the first probe pad, wherein the first sidewall surface is along the plurality of first arms; and

a plurality of second arms extending out from the second probe pad and are interdigitated with the first arms, wherein the second sidewall surface is along the plurality of second arms.

5. The residual chemical reaction diagnostic device of claim 1, wherein the residual chemical reaction sensor provides electrical outputs including a capacitance.

6. A residual chemical reaction diagnostic device, comprising:

a substrate;

a material stack over the substrate; and

a residual chemical reaction sensor patterned from the material stack, wherein the residual chemical reaction sensor comprises:

a first probe pad with a first sidewall that extends an entire height of the material stack; and

a second probe pad with a second sidewall that extends an entire height of the material stack, wherein the residual chemical reaction sensor provides electrical outputs in response to the presence of residual chemical reactions, wherein the residual chemical reaction sensor provides electrical outputs including a capacitance, and wherein the residual chemical reaction sensor further comprises:

a plurality of first arms extending out from the first probe pad, wherein the first sidewall surface is along the plurality of first arms; and

a plurality of second arms extending out from the second probe pad and are interdigitated with the first arms, wherein the second sidewall surface is along the plurality of second arms.