CLAIMS

What is claimed is:

~~1. A structure comprising:~~

~~a plurality of dielectric regions;~~

~~a rivet cell including a set of stacked vias, wherein the rivet cell extends through a stress hotspot of the structure, and a length of the rivet cell threads through at least one dielectric region among the plurality of dielectric regions.~~

~~2. The structure of claim 1, wherein the rivet cell is a first rivet cell located at a first lateral distance from a first corner of the structure, and the structure further comprises a second rivet cell located at a second lateral distance from a second corner of the structure.~~

~~3. The structure of claim 1, wherein the rivet cell is among a number of rivet cells inserted in the stress hotspot, and the number of rivet cells is based on a size of the stress hotspot.~~

~~4. The structure of claim 1, wherein the stress hotspot is among a plurality of stress hotspots across the structure, and each stress hotspot include a respective set of rivet cells.~~

~~5. The structure of claim 1, wherein the length of the rivet cell is based on a model of a relationship between the length of the rivet cell and an energy release rate of the structure.~~

~~6. The structure of claim 1, wherein the structure is a back-end-of-line (BEOL) structure of a semiconductor device.~~

~~7. The structure of claim 1, wherein the rivet cell threads through an interface between a first dielectric region and a second dielectric region among the plurality of dielectric regions, and the first dielectric region and the second dielectric region have different dielectric constants.~~

~~8. The structure of claim 7, wherein the first dielectric region includes hard dielectric materials and the second dielectric region includes soft dielectric materials.~~

~~9.~~1. A method for determining a location of a rivet cell in a structure, the method comprising:

modeling a location of a stress hotspot in a structure;

modeling a relationship between a length of a rivet cell and an energy release rate of the structure;

identifying an optimal length of the rivet cell based on the modeled relationship;

generating rivet cell data that indicates an insertion location of the rivet cell, wherein the insertion location is based on the location of the stress hotspot; and

sending the rivet cell data to a device to instruct the device to construct the structure in accordance with the rivet cell data, such that the structure is constructed to include the rivet cell at the insertion location, and such that the rivet cell extends through the stress hotspot of the structure, and threads through at least one dielectric region among a plurality of dielectric regions of the structure.

~~10.~~2. The method of claim ~~9~~1, wherein the rivet cell data further indicates multiple insertion locations of multiple rivet cells, the multiple insertion locations being within the stress hotspot.

~~11.~~3. The method of claim ~~9~~1, wherein:

modeling the relationship is being performed based on a projection of an anomaly at the location of the stress hotspot and on an interface between a first dielectric region and a second dielectric region among the plurality of dielectric regions;

upon the insertion of the rivet cell, the rivet cell threads through at least a portion the first dielectric region and at least a portion of the second dielectric region; and

the energy release rate of the structure is based on the location of the projected anomaly.

~~12.~~4. The method of claim ~~11~~3, wherein the projected anomaly is a crack at the interface between the first dielectric region and the second dielectric region.

~~13.~~5. The method of claim ~~11~~3, wherein the first dielectric region and the second dielectric region has different values of dielectric constant.

~~14.~~6. The method of claim ~~9~~1, wherein the stress hotspot is among a plurality of stress hotspots across the structure, and each stress hotspot include a respective set of rivet cells.

~~15.~~7. The method of claim ~~9~~1, wherein the rivet cell is among a number of rivet cells inserted in the stress hotspot, and the number of rivet cells is based on a size of the stress hotspot.

~~16.~~8. The method of claim ~~9~~1, wherein identifying the optimal length of the rivet cell comprises identifying a length of the rivet cell that results in a lowest energy release rate.

~~17.~~9. The method of claim ~~9~~1, wherein modeling the stress hotspot comprises:

generating a three-dimensional (3D) model of the structure;

executing an instruction to perform stress analysis on the 3D model; and

identifying the location of the stress hotspot from an output of the stress analysis.

~~18.~~10. A computer program product for determining a location of a rivet cell in a structure, the computer program product comprising a computer readable storage medium having program instructions embodied therewith, the program instructions executable by a processing element of a device to cause the device to:

model a location of a stress hotspot in a structure;

model a relationship between a length of a rivet cell and an energy release rate of the structure;

identify an optimal length of the rivet cell based on the modeled relationship;

generate rivet cell data that indicates an insertion location of the rivet cell, wherein the insertion location is based on the location of the stress hotspot; and

send the rivet cell data to a device to instruct the device to construct the structure in accordance with the rivet cell data, such that the structure is constructed to include the rivet cell at the insertion location, and such that the rivet cell extends through the stress hotspot of the structure, and threads through at least one dielectric region among a plurality of dielectric regions of the structure.

~~19.~~11. The computer program product of claim ~~18~~10, wherein:

the model of the relationship is being performed based on a projection of an anomaly at the location of the stress hotspot and on an interface between a first dielectric region and a second dielectric region among the plurality of dielectric regions;

upon the insertion of the rivet cell, the rivet cell threads through at least a portion the first dielectric region and at least a portion of the second dielectric region; and

the energy release rate of the structure is based on the location of the projected anomaly.

~~20.~~12. The computer program product of claim ~~19~~11, wherein the projected anomaly is a crack at the interface between the first dielectric region and the second dielectric region.

~~21.~~13. The computer program product of claim ~~19~~11, wherein the first dielectric region and the second dielectric region has different values of dielectric constant.

~~22.~~14. The computer program product of claim ~~18~~10, wherein the rivet cell is among a number of rivet cells inserted in the stress hotspot, and the number of rivet cells is based on a size of the stress hotspot.

~~23.~~15. The computer program product of claim ~~18~~10, wherein the stress hotspot is among a plurality of stress hotspots across the structure, and each stress hotspot include a respective set of rivet cells.

~~24.~~16. The computer program product of claim ~~18~~10, wherein the program instructions are further executable by the processing element of the device to cause the device to identify a length

of the rivet cell that results in a lowest energy release rate to identify the optimal length of the rivet cell.

~~25.~~17. The computer program product of claim ~~18~~10, wherein the program instructions are further executable by the processing element of the device to:

generate a three-dimensional (3D) model of the structure;

execute an instruction to perform stress analysis on the 3D model; and identify the location of the stress hotspot from an output of the stress analysis.