

CLAIMS**What is claimed is:**

1. A multi-color light emitting pixel unit, comprising:
a substrate;
- 5 a bottom conductive layer formed on the substrate and a top conductive layer formed over the bottom conductive layer; and
a light emitting layer formed between the top conductive layer and the bottom conductive layer, wherein the light emitting layer includes a plurality of micro-gap structures.
2. The multi-color light emitting pixel unit of claim 1, wherein each one of the micro-gap
- 10 structures extends along a direction perpendicular to the substrate and penetrates the light emitting layer.
3. The multi-color light emitting pixel unit of claim 1, wherein each one of the micro-gap structures is an air gap.
4. The multi-color light emitting pixel unit of claim 3, wherein a cross-sectional dimension of each one of the air gaps is not more than 2 nm.
- 15 5. The multi-color light emitting pixel unit of claim 1, wherein each one of the micro-gap structures is sealed between the top conductive layer and the bottom conductive layer.
6. The multi-color light emitting pixel unit of claim 1, wherein the light emitting layer is a first light emitting layer,
the multi-color light emitting pixel unit further including:
- 20 a second light emitting layer formed between the first light emitting layer and the bottom conductive layer.
7. The multi-color light emitting pixel unit of claim 6, wherein the plurality of micro-gap structures included in the first light emitting layer are a first plurality of micro-gap structures,
the second light emitting layer including a second plurality of micro-gap structures.
- 25 8. The multi-color light emitting pixel unit of claim 7, wherein the first plurality of micro-gap structures are not vertically aligned with the second plurality of micro-gap structures.
9. The multi-color light emitting pixel unit of claim 7, further comprising:
a metal layer formed between the first light emitting layer and the second light emitting layer, and
a top isolation layer formed between the first light emitting layer and the top conductive layer.
- 30 10. The multi-color light emitting pixel unit of claim 9, wherein
the first plurality of micro-gap structures are sealed between the top isolation layer and the metal layer, and
the second plurality of micro-gap structures are sealed between the metal layer and the bottom conductive layer.
- 35 11. The multi-color light emitting pixel unit of claim 6, wherein the multi-color light emitting pixel unit further includes:
a third light emitting layer formed between the second light emitting layer and the bottom conductive layer.

12. The multi-color light emitting pixel unit of claim 11, wherein at least one of the second light emitting layer and the third light emitting layer includes a plurality of micro-gap structures.

13. The multi-color light emitting pixel unit of claim 11, wherein the plurality of micro-gap structures included in the first light emitting layer are a first plurality of micro-gap structures,

5 the second light emitting layer including a second plurality of micro-gap structures, and the third light emitting layer including a third plurality of micro-gap structures.

14. The multi-color light emitting pixel unit of claim 13, wherein the first plurality of micro-gap structures are not vertically aligned with the second plurality of micro-gap structures, and

10 the second plurality of micro-gap structures are not vertically aligned with the third plurality of micro-gap structures.

15. The multi-color light emitting pixel unit of claim 13, further comprising:

a first metal layer formed between the first light emitting layer and the second light emitting layer;

15 a second metal layer formed between the second light emitting layer and the third light emitting layer; and

a top isolation layer formed between the first light emitting layer and the top conductive layer.

16. The multi-color light emitting pixel unit of claim 15, wherein

20 the first plurality of micro-gap structures are sealed between the top isolation layer and the first metal layer,

the second plurality of micro-gap structures are sealed between the first metal layer and the second metal layer, and

25 the third plurality of micro-gap structures are sealed between the second metal layer and the bottom conductive layer.

17. A micro display panel comprising the multi-color light emitting pixel unit of claim 1.