What is claimed is:

1. A multi-color micro-LED array light source comprising:

a thermally conductive substrate;

multiple arrays of micro-LEDs monolithically integrated on the thermally conductive substrate, wherein the micro-LEDs from all of the arrays in aggregate comprise at least two different color micro-LEDs arranged in an interleaved manner and each array comprises:

a plurality of micro-LEDs that are all a same color;

a driver input for receiving a driver signal for the plurality of micro-LEDs; and

electrical connections that connect the plurality of micro-LEDs to the driver input, wherein the plurality of micro-LEDs are driven in unison by the driver signal; and

passive collimation optics integrated on the thermally conductive substrate, the passive collimation optics comprising:

a reflective cup having a base, the arrays of micro-LEDs positioned at a base of the reflective cup, the reflective cup collimating light produced by the arrays of micro-LEDs outside a central divergence cone; and

refractive optics having a single refractive surface, the refractive optics positioned at the base of the reflective cup so that the arrays of micro-LEDs are immersed within the refractive optics, the refractive optics collimating light produced by the arrays of micro-LEDs within the central divergence cone.

2. The multi-color micro-LED array light source of claim 1, wherein each micro-LED has at least one lateral dimension smaller than 100 microns.

3. The multi-color micro-LED array light source of claim 1, wherein each micro-LED has all lateral dimensions smaller than 100 microns.

4. The multi-color micro-LED array light source of claim 1, wherein the multiple arrays of micro-LEDs comprise at least one array of red micro-LEDs, at least one array of green micro-LEDs and at least one array of blue micro-LEDs.

5. The multi-color micro-LED array light source of claim 4, wherein the multiple arrays of micro-LEDs further comprise at least one array of white micro-LEDs.

6. The multi-color micro-LED array light source of claim 1, wherein the multiple arrays of micro-LEDs include at least two arrays of each different color of micro-LEDs.

7. The multi-color micro-LED array light source of claim 1, wherein, for each array, all the micro-LEDs within the array are electrically connected in parallel or in series.

8. The multi-color micro-LED array light source of claim 1, further comprising:

a controller that generates the driver signals for the multiple arrays of different color micro-LEDs.

9. The multi-color micro-LED array light source of claim 8, wherein the controller drives all of the micro-LEDs for each of the different colors in unison, but drives each different color separately from each other.

10. The multi-color micro-LED array light source of claim 8, wherein the controller drives all of the micro-LEDs for all of the different colors in unison.

11. The multi-color micro-LED array light source of claim 1, wherein the micro-LEDs are stripes, with different color stripes interleaved along one lateral dimension.

12. The multi-color micro-LED array light source of claim 1, wherein the micro-LEDs are pixels, with different color pixels interleaved along two lateral dimensions.

13. The multi-color micro-LED array light source of claim 1, wherein the micro-LEDs are thin-film micro-LEDs comprising epitaxial layers, n-electrodes, and p-electrodes, with a growth substrate removed.

14. The multi-color micro-LED array light source of claim 13, wherein the thin-film micro-LEDs are monolithically integrated on the thermally conductive substrate by transferring the epitaxial layers from a host substrate to the thermally conductive substrate via eutectic bonding.

15. The multi-color micro-LED array light source of claim 1, wherein the refractive optics includes a refractive lens centered on and positioned one focal length above the arrays of micro-LEDs.

16. The multi-color micro-LED array light source of claim 1, wherein the refractive optics is a free-form refractive optics.

17. The multi-color micro-LED array light source of claim 1, wherein the refractive optics includes a refractive lens superimposed on top of a refractive hemisphere with a focal point of the refractive lens coincident with a center of the refractive hemisphere, the arrays of micro-LEDs positioned at the center of the refractive hemisphere.

18. A light engine comprising:

a multi-color micro-LED array light source comprising:

a thermally conductive substrate; and

multiple arrays of micro-LEDs monolithically integrated on the thermally conductive substrate, wherein the micro-LEDs from all of the arrays in aggregate comprise at least two different color micro-LEDs arranged in an interleaved manner and each array comprises:

a plurality of micro-LEDs that are all a same color;

a driver input for receiving a driver signal for the plurality of micro-LEDs; and

electrical connections that connect the plurality of micro-LEDs to the driver input, wherein the plurality of micro-LEDs are driven in unison by the driver signal; and

passive collimation optics integrated on the thermally conductive substrate, the passive collimation optics comprising:

a reflective cup having a base, the arrays of micro-LEDs positioned at a base of the reflective cup, the reflective cup collimating light produced by the arrays of micro-LEDs outside a central divergence cone; and

refractive optics having a single refractive surface, the refractive optics positioned at the base of the reflective cup so that the arrays of micro-LEDs are immersed within the refractive optics, the refractive optics collimating light produced by the arrays of micro-LEDs within the central divergence cone;

a digital micromirror device that modulates the output light distribution from the multi-color micro-LED array light source;

optics that collimates the output light distribution from the multi-color LED array light source to the digital micromirror device; and

a projection lens that projects the modulated light for display to end users.

19. The light engine of claim 18 wherein the multi-color micro-LED array light source further comprises:

a controller that generates the driver signals for the multiple arrays of different color micro-LEDs, and the controller drives all of the micro-LEDs for each of the different colors in unison.

20. The light engine of claim 18 wherein the refractive optics includes a refractive lens superimposed on top of a refractive hemisphere with a focal point of the refractive lens coincident with a center of the refractive hemisphere, the arrays of micro-LEDs positioned at the center of the refractive hemisphere.