

Description of Additional Supplementary Files

File Name: Supplementary Movie 1

Description: This movie shows the superior self-healing performance of 92-AAHA-IL demonstrated by blocking picometer-sized nitrogen gas molecules after self-healing.

File Name: Supplementary Movie 2

Description: This movie demonstrates the ultra-fast self-healing capacity of the 92-AAHA-IL-based ionoconductor.

File Name: Supplementary Movie 3

Description: This movie shows the facile fabrication of a multi-color emitting ACED by simply connecting two ACEDs.

File Name: Supplementary Movie 4

Description: This movie illustrates the application of the self-healing properties in a pixelated ACED. Square-shaped ACEDs with green- and blue-emissive layers (10 mm length \times 10 mm width \times 700 μm thickness) were connected to form a 3 \times 3 pixelated ACED. After self-healing, the pixelated ACED successfully operated under various deformations. This highlights the great potential of the present systems in reconfigurable displays.

File Name: Supplementary Movie 5

Description: This movie demonstrates the self-healing capacity of 92-AAHA-IL in sub-zero temperature conditions.

File Name: Supplementary Movie 6

Description: This movie demonstrates the self-healing capacity of 92-AAHA-IL underwater environments.