Supplementary Material

Carbon Nanotubes Reinforced Self-healable Polythiourethane with Excellent Bonding Strength and Improved Thermal Conductivity

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Figure S1. Testing of electro-mechanical universal testing machine and lap mode of the bonding samples.
Figure S2. The lap shear samples and tensile samples.

Preparation method of tensile samples: Take two bonded test specimens with surface treatment, the lap shear sample to be tested evenly in the areas of 10 mm × 10 mm, and fit the two. A 100 μm spacer was place in the gap to control the thickness. Finally, a heavy weight is placed above the specimen to ensure that the bonding surface is completely attached.

Figure S3. The test samples of DCB.
The strain energy release rate $G_C$ was calculated using Eq. S1 for the 3M 2665, Locite 3542, 0 wt% and 0.3 wt% of the doping contents of the TMXDI-modified CNTs adhesive. Here, $P$ is the applied load, $b$ is the specimen width, $C$ is the compliance of the specimen, and $a$ is the crack length. The term $C$ can be expressed as Eq. S2, where $\delta$ is the extension on the load line and $P$ is the applied load.

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G_C = \frac{P^2 dC}{2bda}
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\text{(Eq. S1)}

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C = \frac{\delta}{P}
\]  
\text{(Eq. S2)}
Figure S5. The report of mechanical properties test.

Figure S6. Glass transition temperature ($T_g$) of samples with different contents.
Figure S7. The optical performance test samples.