

Supplementary Material

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

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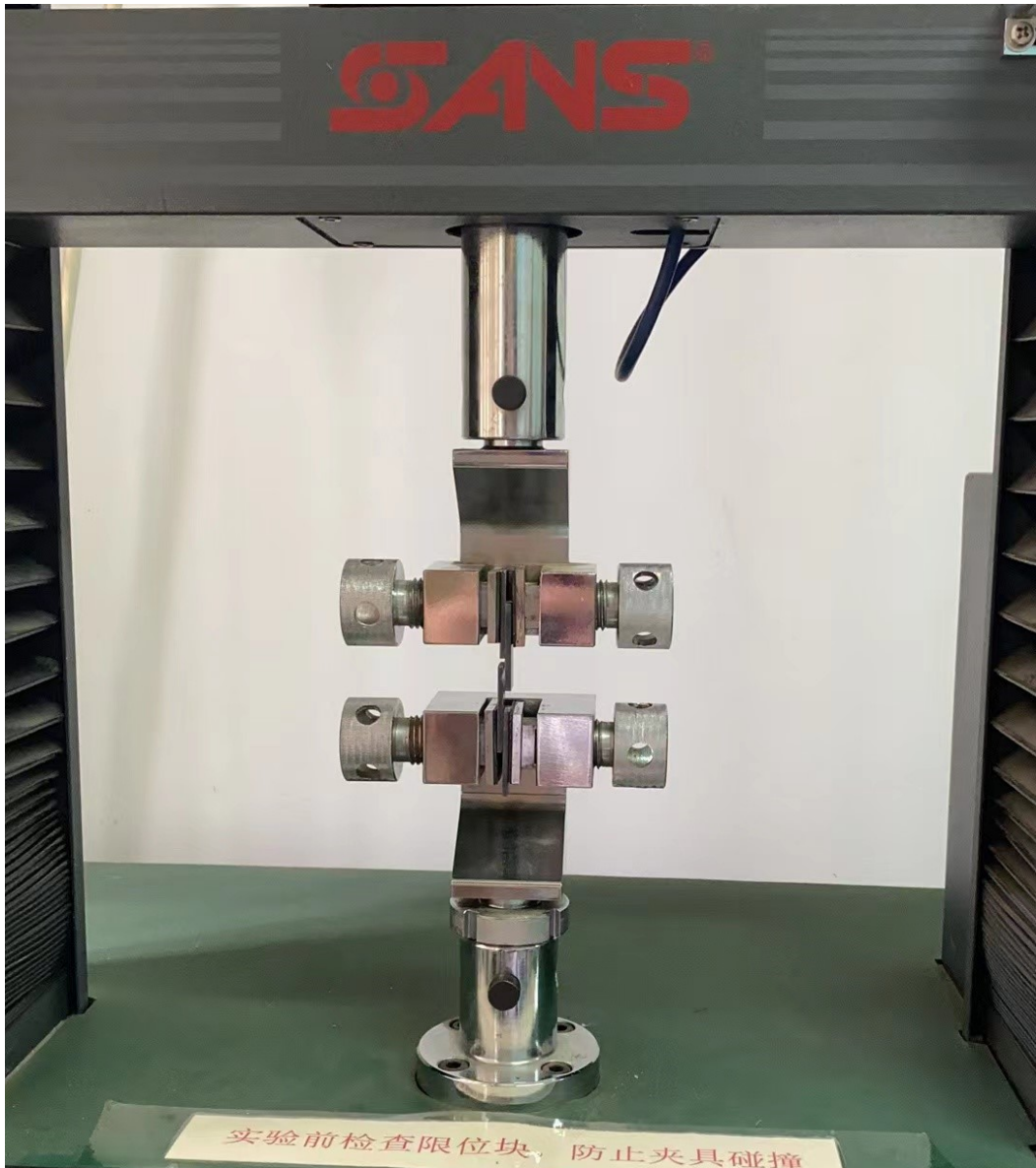


Figure S1. Testing of electro-mechanical universal testing machine and lap mode of the bonding samples.

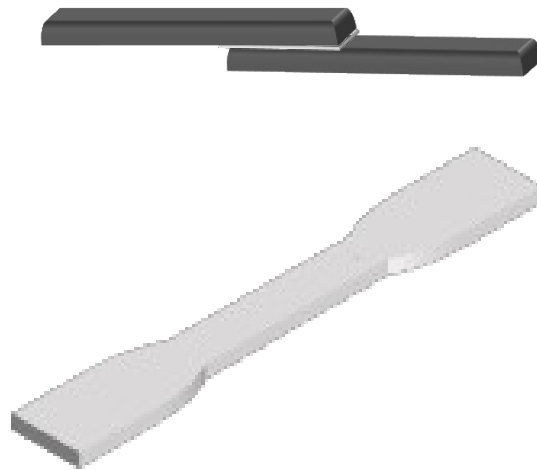


Figure S2. The lap shear samples and tensile samples.

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 $10\text{ mm} \times 10\text{ mm}$, and fit the two. A $100\text{ }\mu\text{m}$ spacer was placed 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.

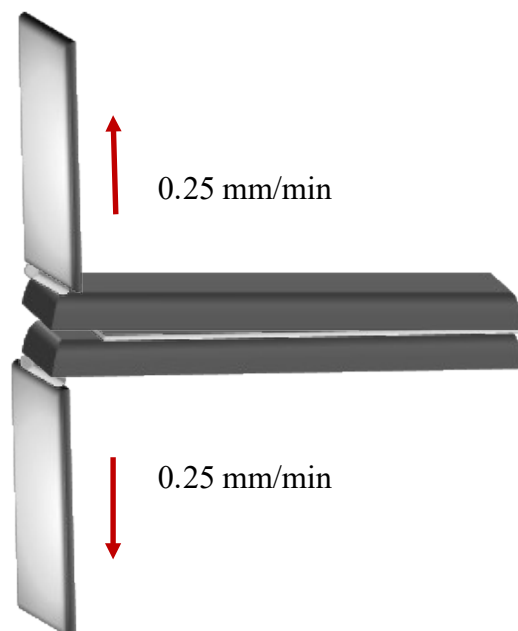


Figure S3. The test samples of DCB.

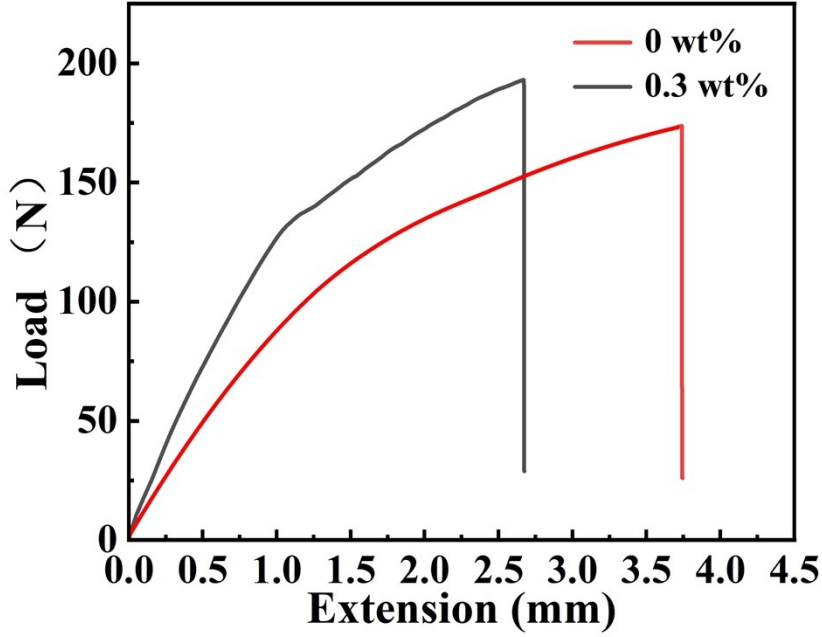


Figure S4. Load-extension curves measured by DCB samples.

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 δ is the extension on the load line and P is the applied load.

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

$$C = \frac{\delta}{P} \quad (\text{Eq. S2})$$

北京科大分析检验中心有限公司

检测报告

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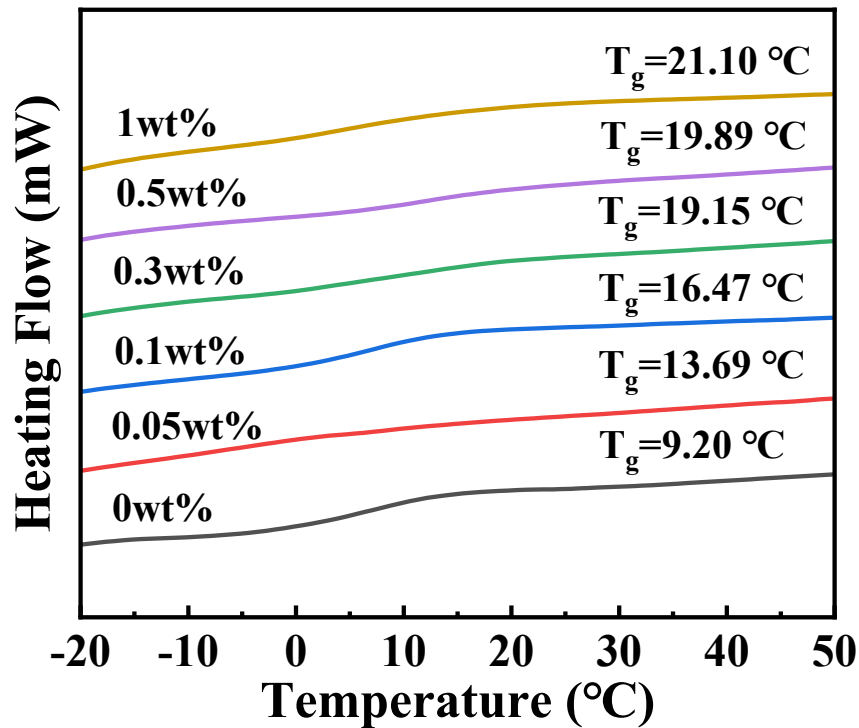
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|-------|--------------------|-----------------|------|
| 客户名称 | 北京科技大学 | | |
| 客户地址 | 北京市海淀区学院路30号北京科技大学 | 邮政编码 | —— |
| 委托人 | 联系电话 | —— | 传真 |
| | E-mail | —— | |
| 样品情况 | 委托单号 | 2021100059 | 委托日期 |
| | 样品名称 | 粘接试样 | 样品状态 |
| | 样品数量 | 1件 | 样品来源 |
| 检测项目 | 检测名称 | 金属材料室温拉伸试验 | |
| | 检测要求 | 剪切强度 | |
| | 检测依据 | GB/T 228.1-2010 | |
| 检测结果 | 检测结果见下页 | | |
| 备注 | 以下结果仅供科研使用 | | |
| 检测专用章 | 编制人 | 刘清欣 | |
| | 校核人 | 郝琳 | |
| | 签发人 | 刘至可 | |
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| | 完成日期 | 2021年10月19日 | |

北京科大分析检验中心有限公司
检测结果

(2021)科测(L/N)第0163号

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| 样品编号 (批号-原号) | 剪切强度/MPa | 备注 |
| 批号 I012110059 | | |
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Figure S5. The report of mechanical properties test.

Figure S6. Glass transition temperature (T_g) of samples with different contents.

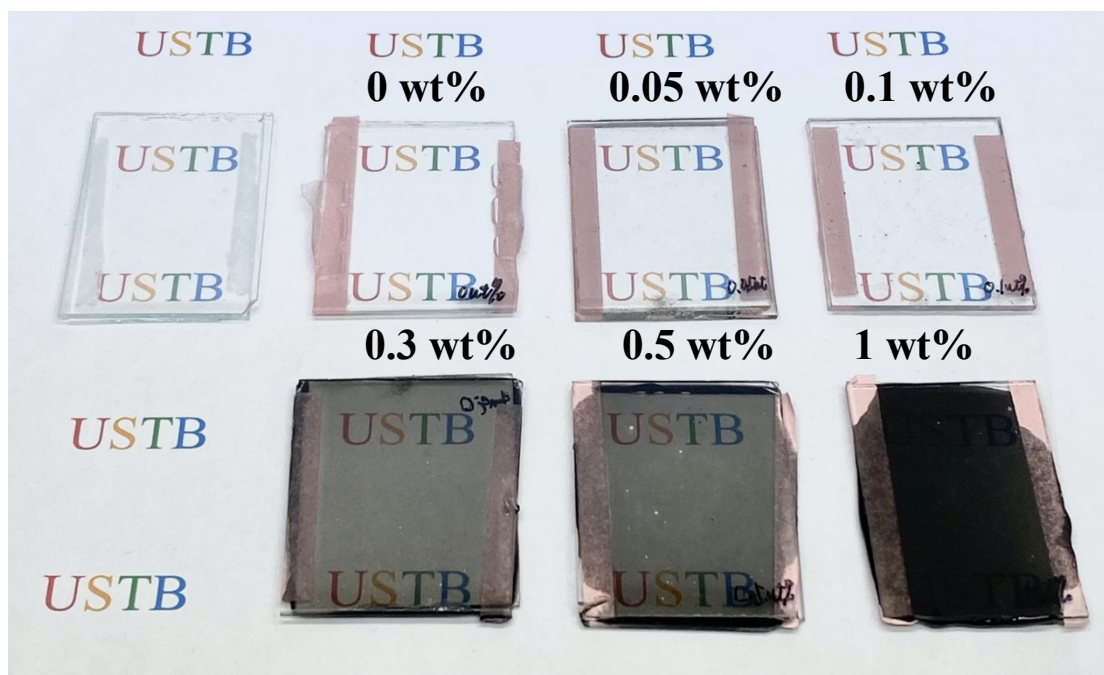


Figure S7. The optical performance test samples.