Adhesion between two carbon nanotubes: Insights from molecular dynamics simulations and continuum mechanics

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Highlights

- Radial adhesion between two identical and non-identical CNTs are modeled using classical MD simulations.
- A linear elastic continuum model for adhesive structures between two non-identical CNTs is established and solved analytically.
- Non-collapsed configurations predicted by continuum model are well consistent with results of MD simulations.
- Roles of diameters, chiralities, numbers of walls on the inter-tube adhesion are studied both quantitatively and qualitatively.
- Collapsed adhesion between two non-identical CNTs is also briefly studied.