

160 Atomistic simulation of soldering iron filled carbon nanotubes

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The melting and soldering processes of two iron filled carbon nanotubes is explored by means of classical molecular dynamics, in order to develop an understanding of the underlying mechanism that govern the dynamics of nano-soldering. Molten Fe flows from the open end of two CNT's, leading to a liquid junction, and eventually to a solid contact. This soldering process is accompanied by partial or total healing of the carbon nanotubes, which after cooling and relaxation from just a single unit which encapsulates the iron, depending on the relative separation, diameters and axial offset of the nanotubes. This makes for a promising scenario for CNT soldering, repairing and healing, and variety of different tools in the field of nanoelectronics.

References

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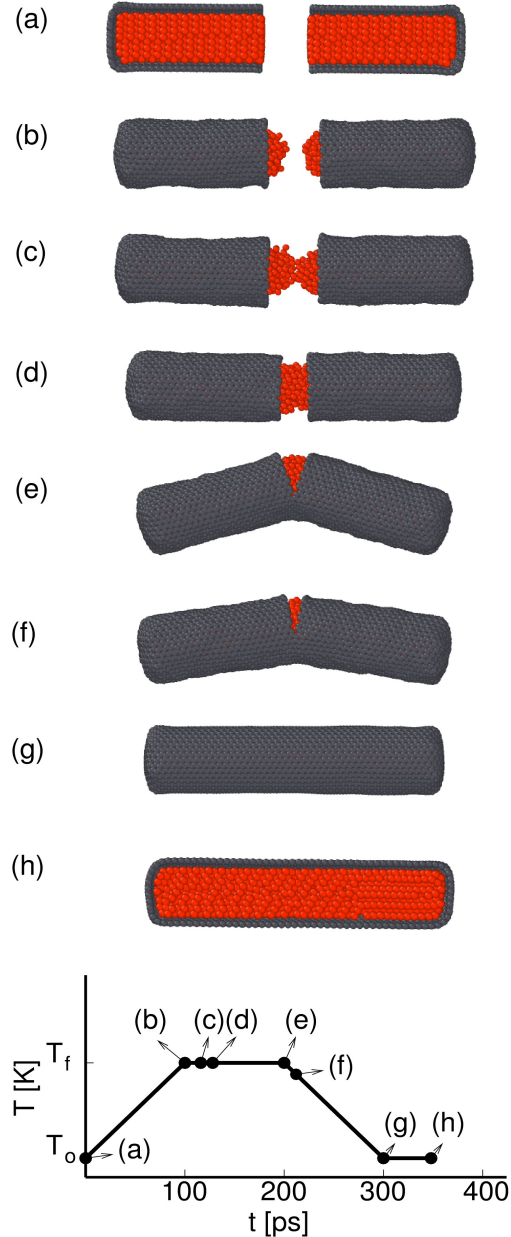


Fig. 1 The figure shows the time sequence of the welding process.