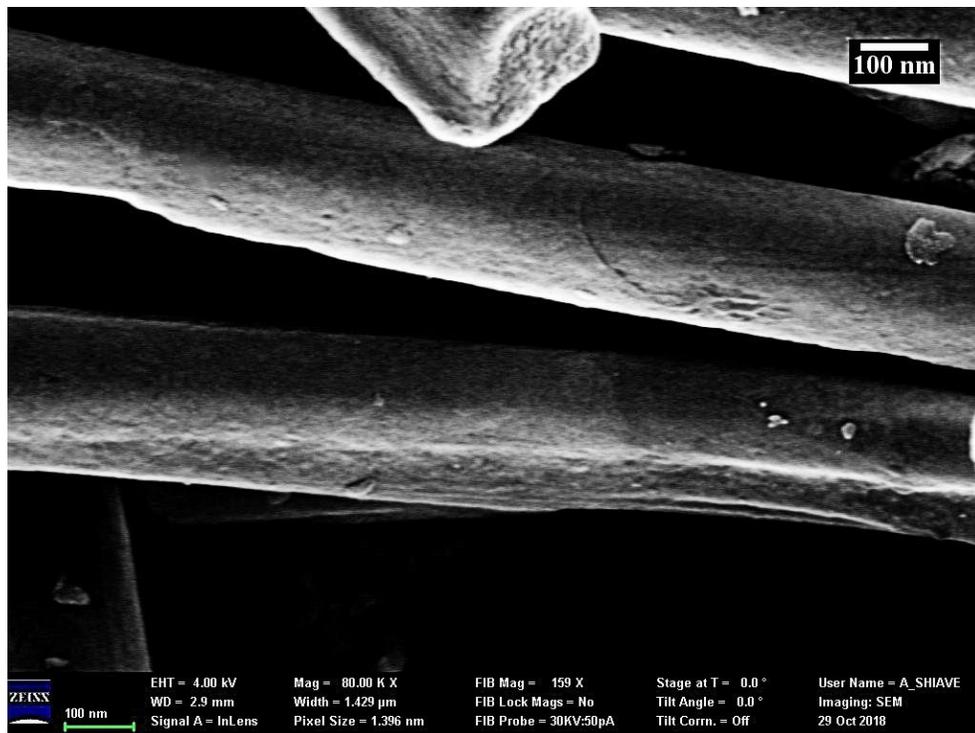
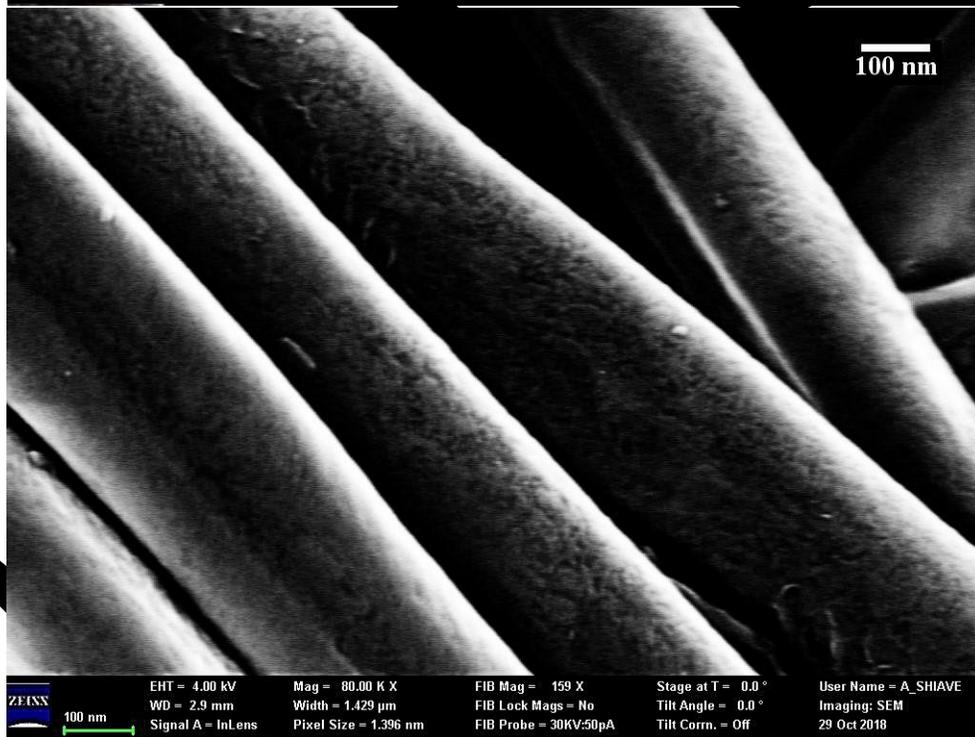


# Images from different characterization tools

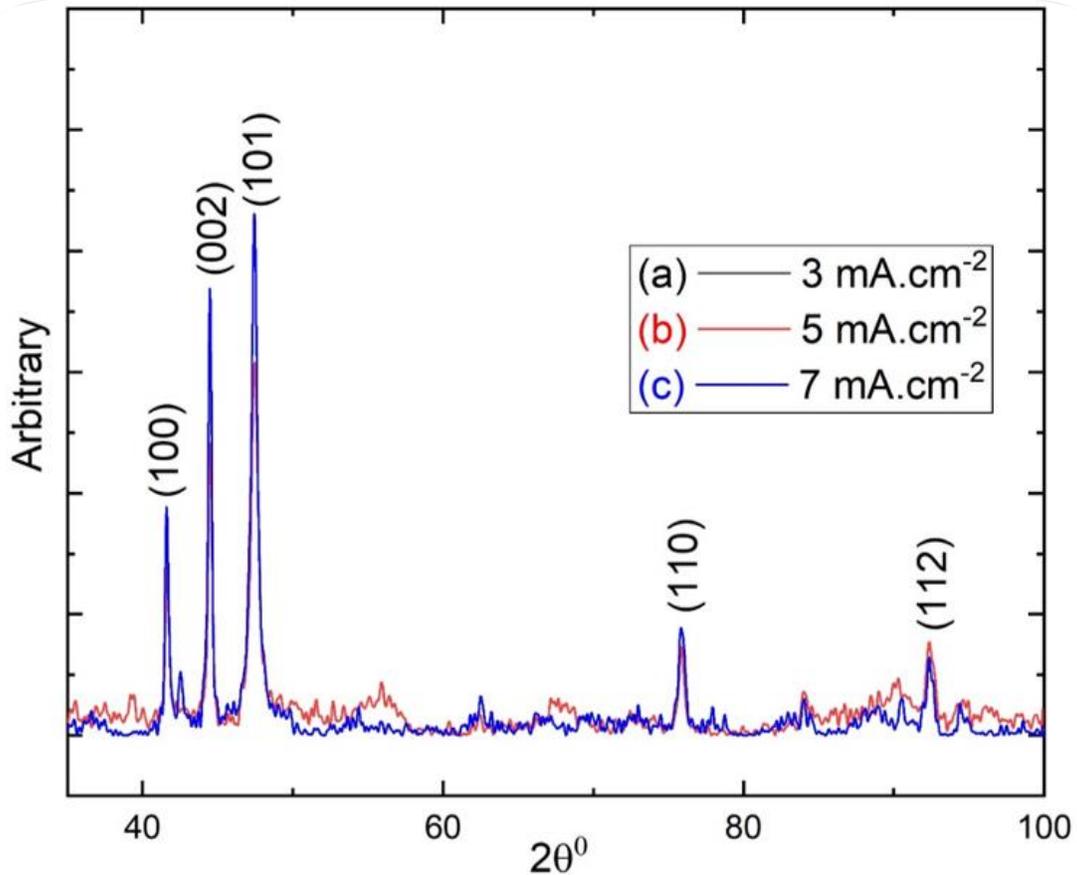


**Fig:** Co Nanowire deposited at  $3 \text{ mA.cm}^{-2}$  current density and at Room temperature



**Fig:** Co Nanowire deposited at  $7 \text{ mA.cm}^{-2}$  current density and at Room temperature

## Images from different characterization tools



**Figure 3.7:** XRD spectra of Co nanowire deposited at 40 °C; (a) 3 mA.cm<sup>-2</sup>, (b) 5 mA.cm<sup>-2</sup> and (c) 7 mA.cm<sup>-2</sup>

# Images from different characterization tools

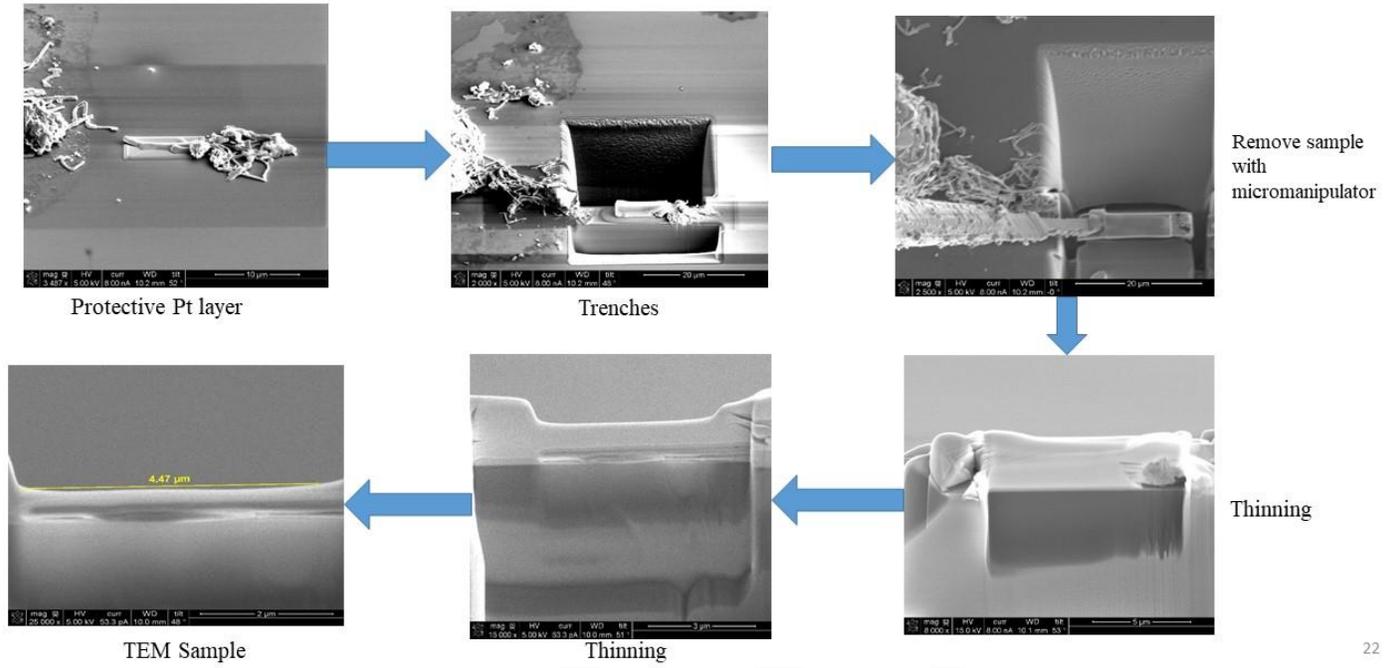
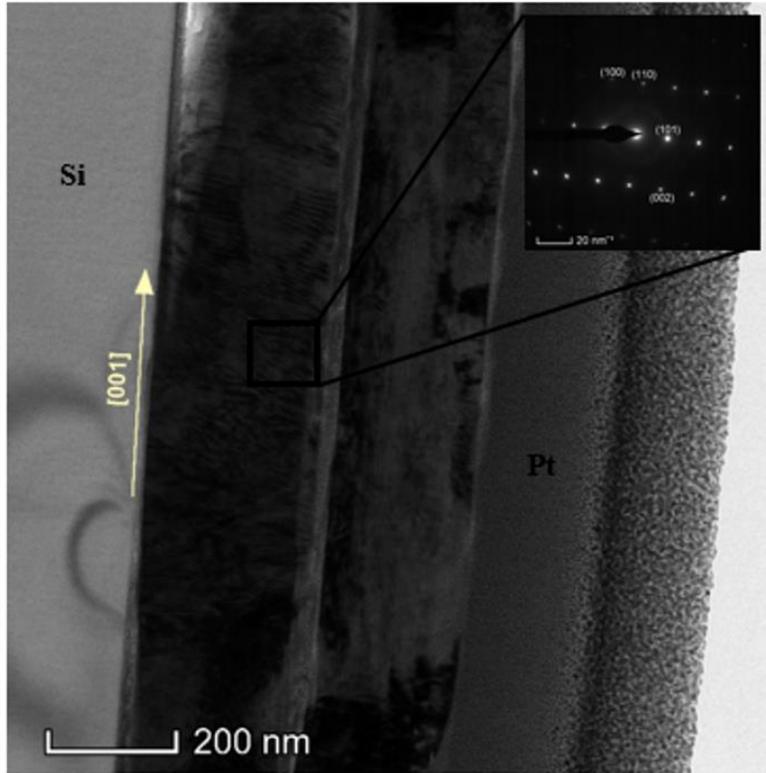


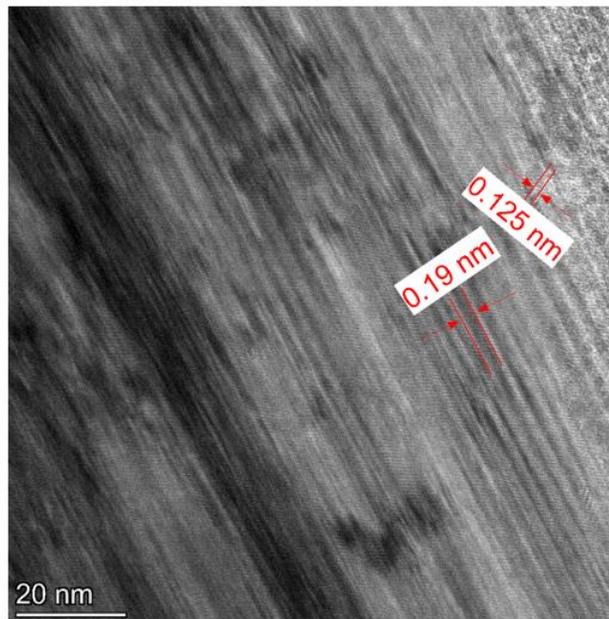
Figure: TEM Sample Preparation Via FIB

DO NOT

## Images from different characterization tools



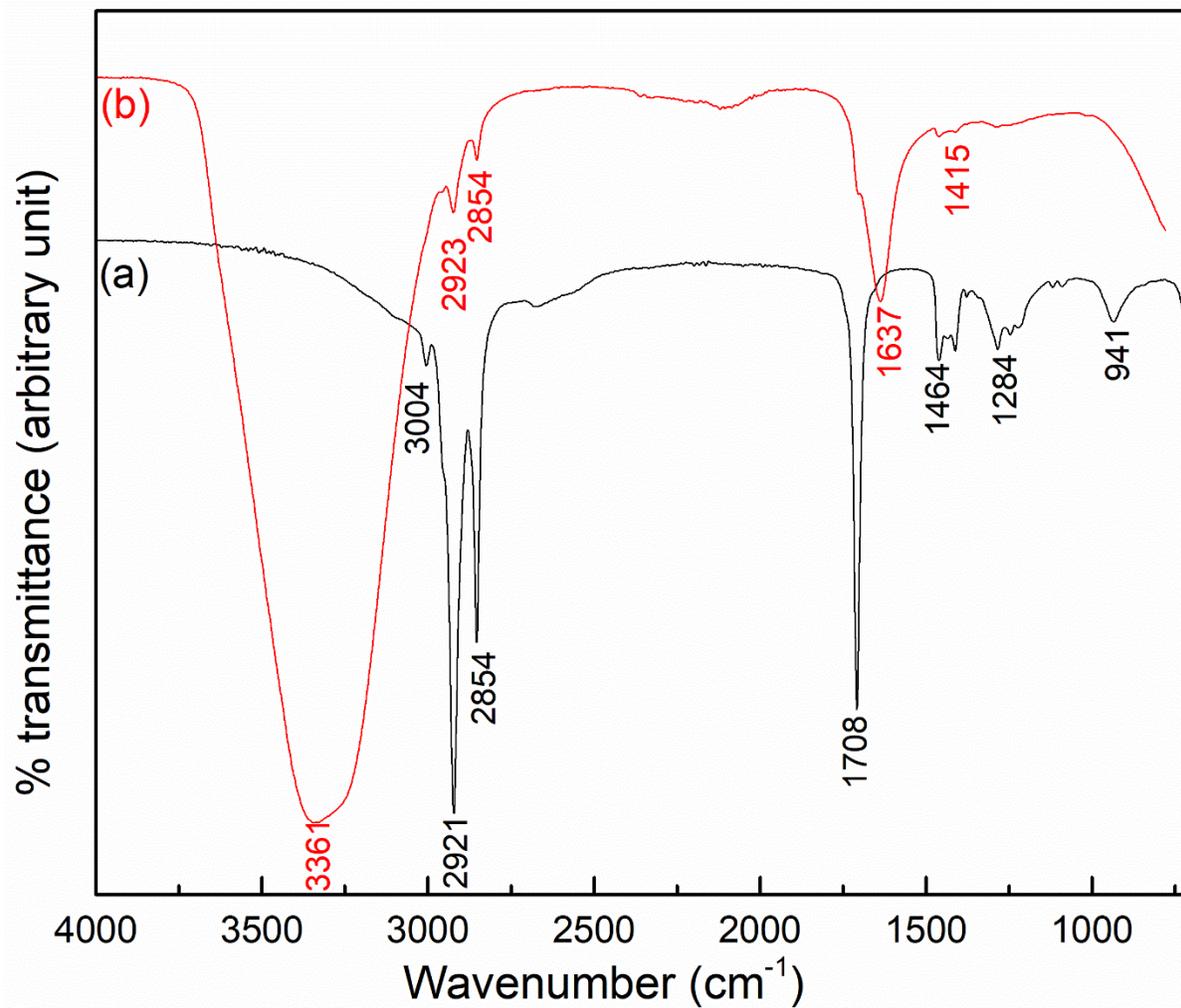
**Figure 3.11:** TEM Image of [001] Co nanowire deposited at  $7\text{mA}\cdot\text{cm}^{-2}$  and  $40\text{ }^{\circ}\text{C}$ . Inset is showing the SAED pattern which confirms the single-crystalline nature of Co nanowire



**Figure 3.15:** HRTEM image is showing d-spacing (0.191 nm) of dominant (101) plane.

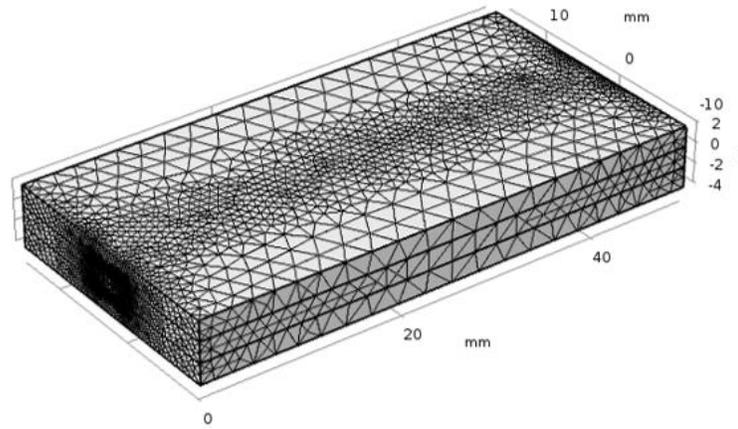
We can see (110) plane also in the figure with d-spacing of 0.125 nm

## Images from different characterization tools

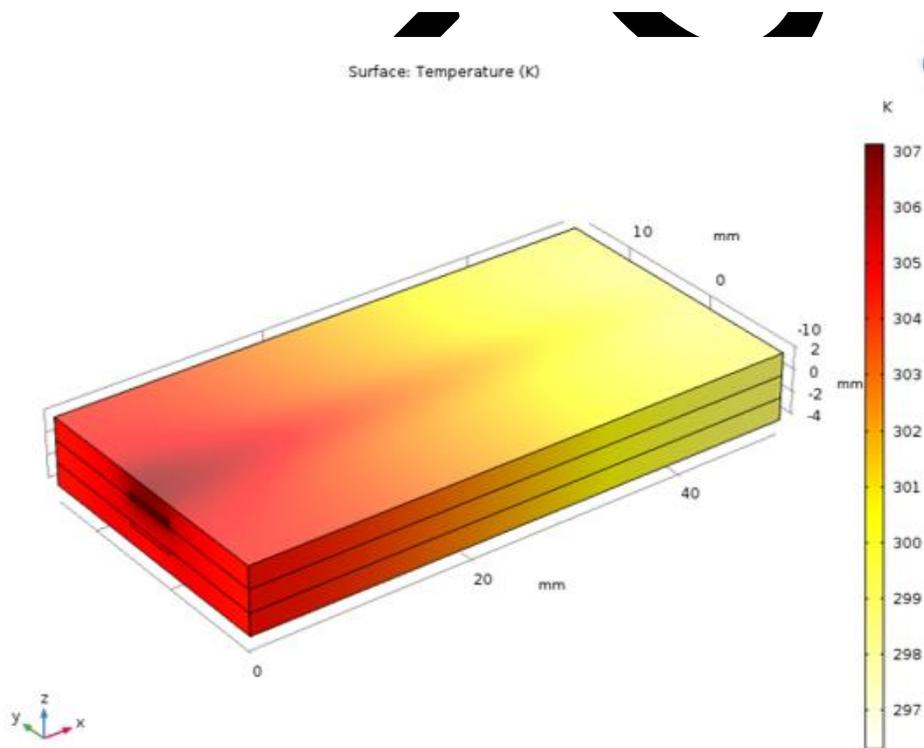


**Figure: FT-IR SPECTRA OF (a) PURE OLEIC ACID, (b) OA TREATED COBALT NANOWIRES**

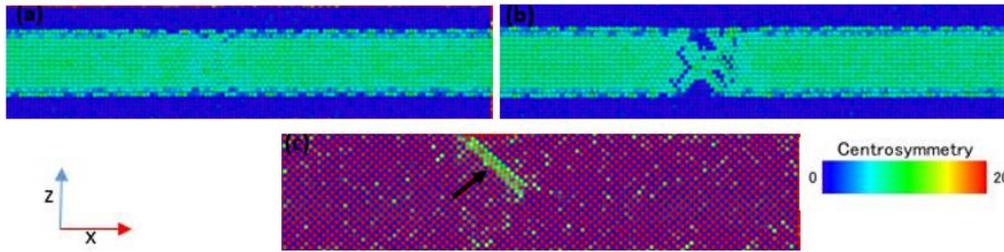
# Some Modeling results



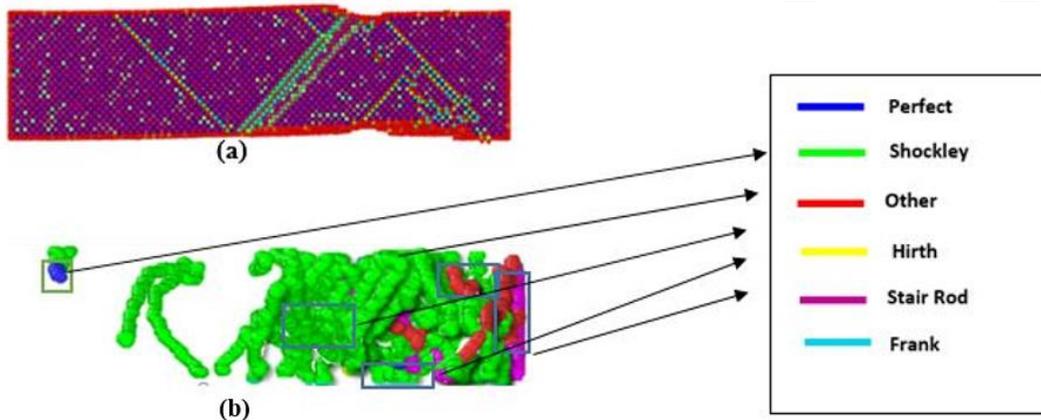
**Figure 5.3:** The computational domain of microfluidic chip with mesh (Finer physics-controlled mesh in COMSOL)



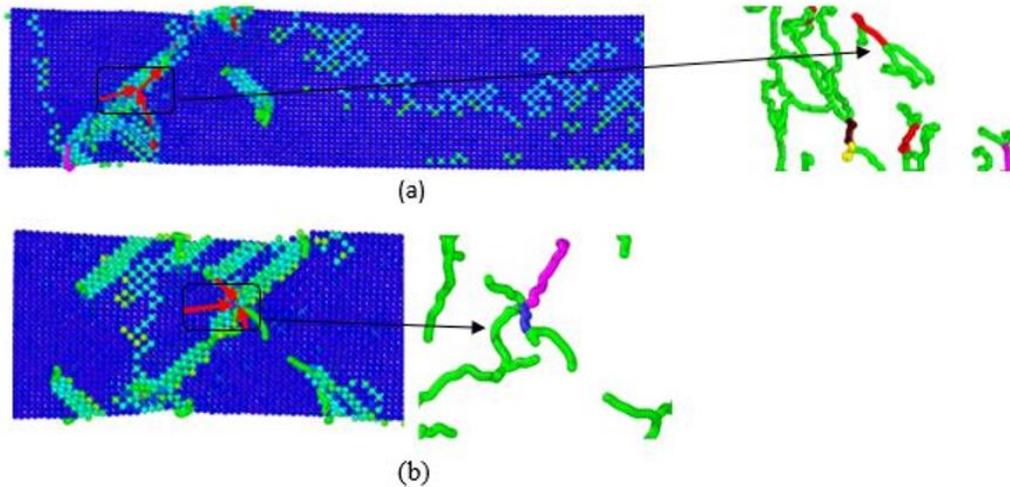
**Figure 5.4:** The surface temperature distribution for the domain



**Figure:** Deformation Mechanism of Ni-Co-Ni Core-Shell Nanowires using Large Scale Atomistic Molecular Dynamics Simulations showing slip type deformation



**Figure.** Various dislocations after yielding (10% strain) in Ni nanowire. (a) CSP of deformed nanowire. (b) Dislocation types present in Nickel nanowire at same strain



**Figure.** (a) Formation of two Shockley (Green) partials dissociating from a perfect dislocation (red). Red arrows indicate the direction of these dislocations. (b) formation of perfect dislocation (purple) after the reaction among two Shockley partials (green) and one stair rod (blue)

**Details:** <https://www.ingentaconnect.com/content/asp/asm/2019/00000011/00000012/art00004>