Electronic Supplementary Material (ESI) for Faraday Discussions.


# Supplementary Information

## On the mechanical response in nanoalloys: the case of Ni-Co

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The Supplementary Information includes Figures S1-S8.

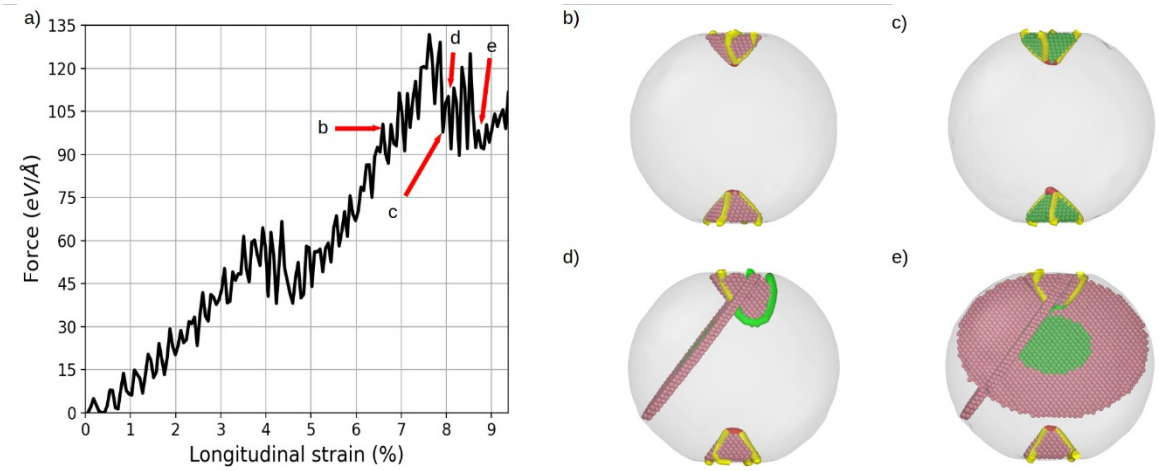


**Figure S1.** (a) Dislocation density and force-strain curve of core-shell $Ni_{12.5}Co_{87.5}$ Snapshots taken at: (b) 6.65%, (c) 7.92%, (d) 8.1%, and (e) 8.71% of longitudinal strain. Shockley partial, Hirth, and Other dislocation are represented by a green, yellow, and red lines, respectively; Co hcp atoms are represented by pink spheres, whereas Ni hcp atoms are represented by green spheres, while fcc atoms are omitted for clarity.

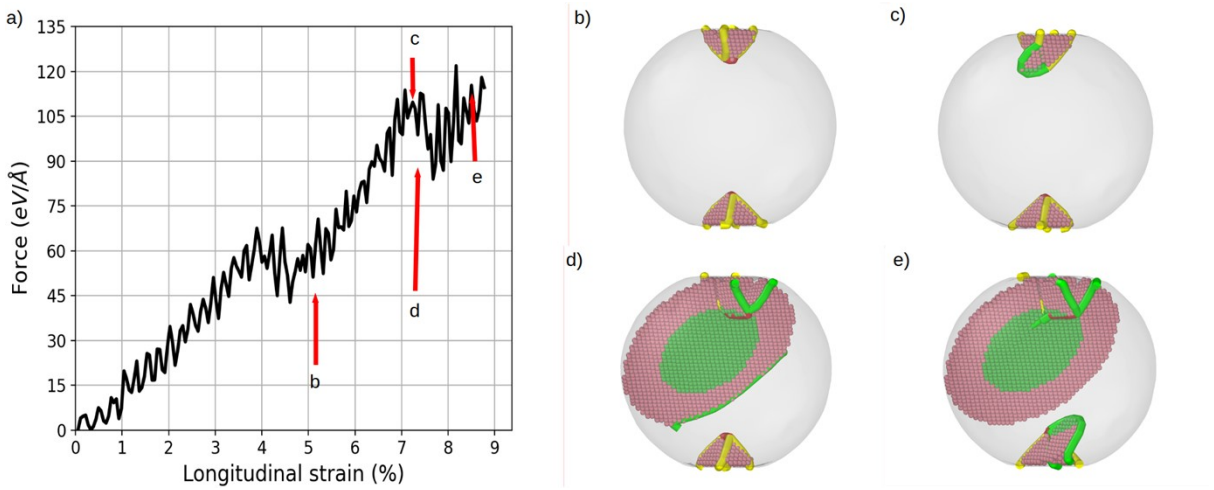


**Figure S2.** (a) Dislocation density and force-strain curve of core-shell $Ni_{25}Co_{75}$ Snapshots taken at: (b) 5.53%, (c) 7.45%, (d) 7.62%, and (e) 8.66% of longitudinal strain. Shockley partial, Hirth, and Other dislocation are represented by a green, yellow, and red lines, respectively; Co hcp atoms are represented by pink spheres, whereas Ni hcp atoms are represented by green spheres, while fcc atoms are omitted for clarity.

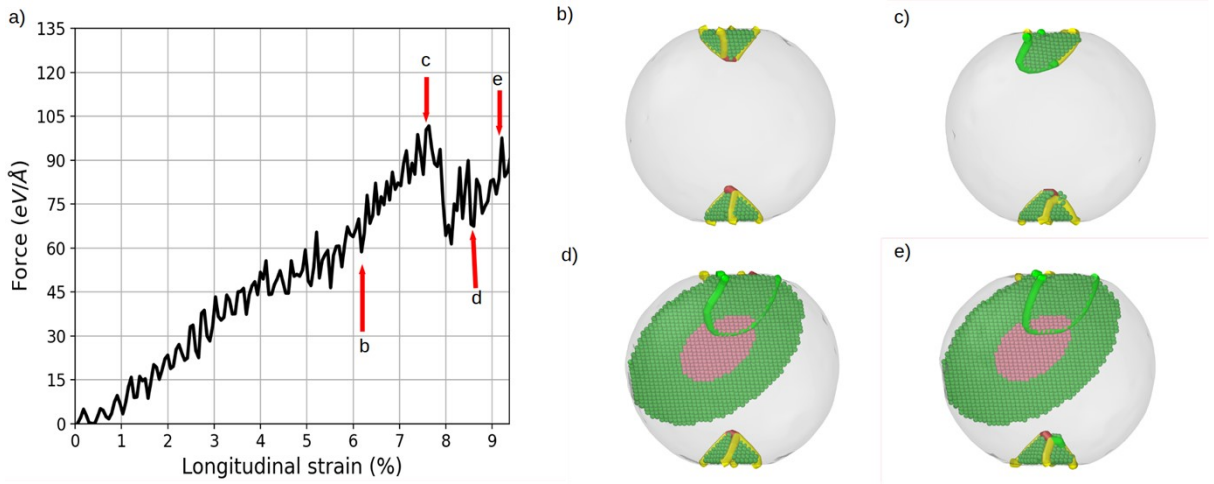


**Figure S3.** (a) Dislocation density and force-strain curve of core-shell $Co_{12.5}Ni_{87.5}$ Snapshots taken at: (b) 6.18%, (c) 7.63%, (d) 8.54%, and (e) 9.14% of longitudinal strain. Shockley partial, Hirth, and Other dislocation are represented by a green, yellow, and red lines, respectively; Co hcp atoms are represented by pink spheres, whereas Ni hcp atoms are represented by green spheres, while fcc atoms are omitted for clarity.

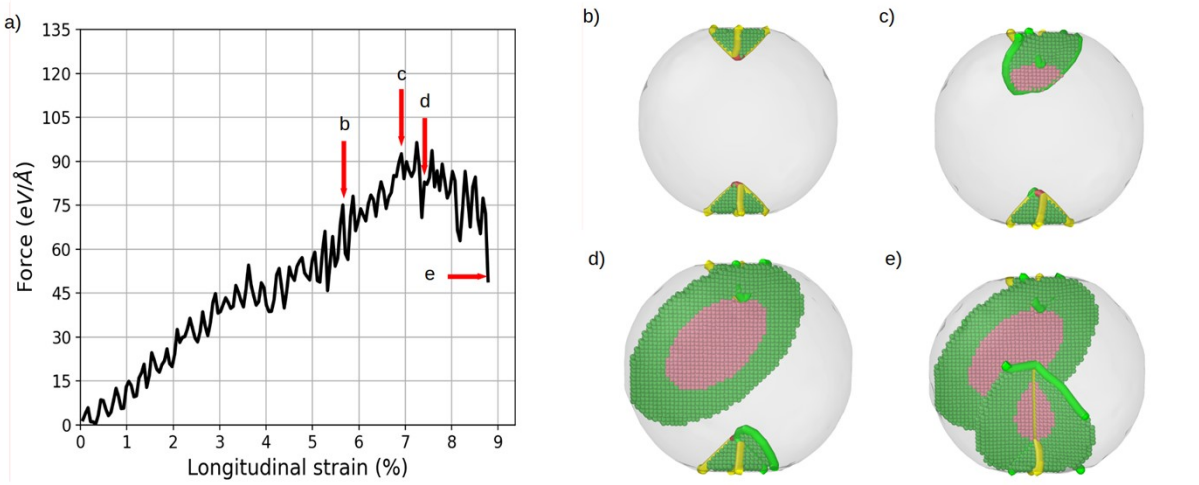


**Figure S4** (a) Dislocation density and force-strain curve of core-shell $Co_{25}Ni_{75}$ Snapshots taken at: (b) 5.6%, (c) 6.92%, (d) 7.41%, and (e) 8.81% of longitudinal strain. Shockley partial, Hirth, and Other dislocation are represented by a green, yellow, and red lines, respectively; Co hcp atoms are represented by pink spheres, whereas Ni hcp atoms are represented by green spheres, while fcc atoms are omitted for clarity.

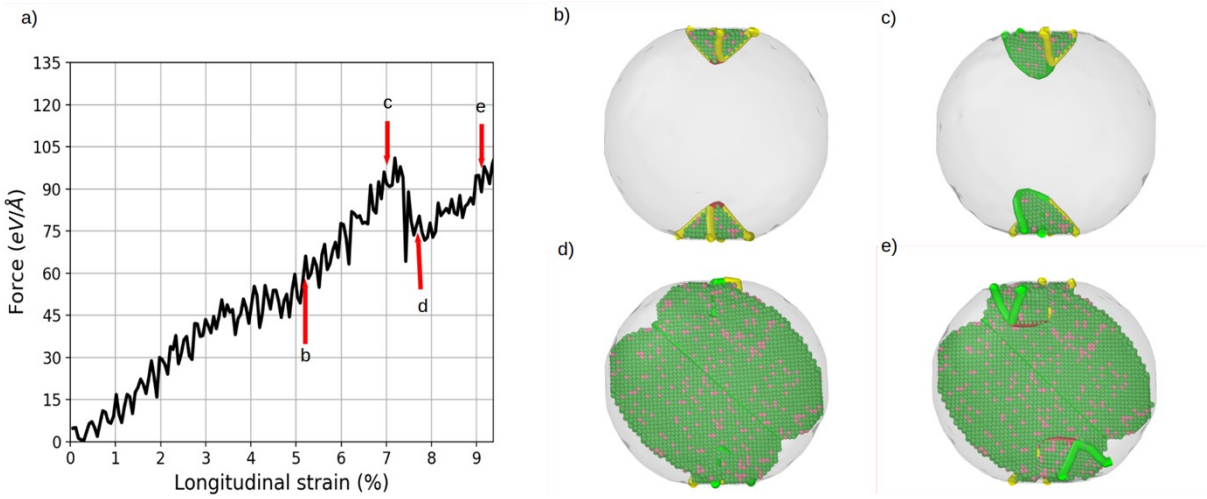


**Figure S5** (a) Dislocation density and force-strain curve of random mix $Co_{12.5}Ni_{87.5}$. Snapshots at: (b) 5.15%, (c) 7.01%, (d) 7.67%, and (e) 9.16% of longitudinal strain. Shockley partial, Hirth, and Other dislocation are represented by a green, yellow, and red lines, respectively; Co hcp atoms are represented by pink spheres, whereas Ni hcp atoms are represented by green spheres, while fcc atoms are omitted for clarity.

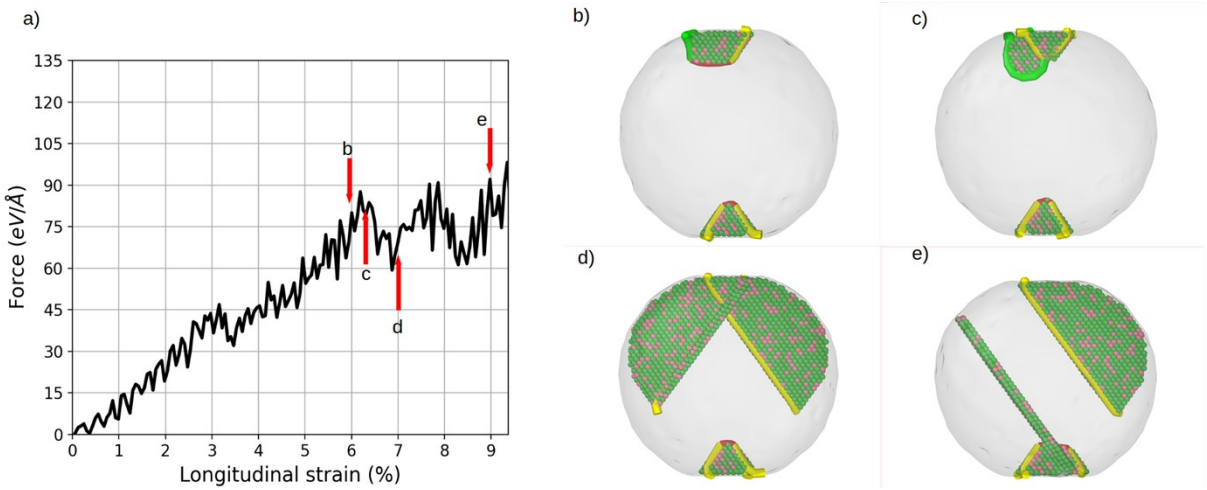


**Figure S6** (a) Dislocation density and force-strain curve of random mix $Co_{25}Ni_{75}$. Snapshots at: (b) 6.0%, (c) 6.3%, (d) 7.0%, and (e) 9.0% of longitudinal strain. Shockley partial, Hirth, and Other dislocation are represented by a green, yellow, and red lines, respectively; Co hcp atoms are represented by pink spheres, whereas Ni hcp atoms are represented by green spheres, while fcc atoms are omitted for clarity.

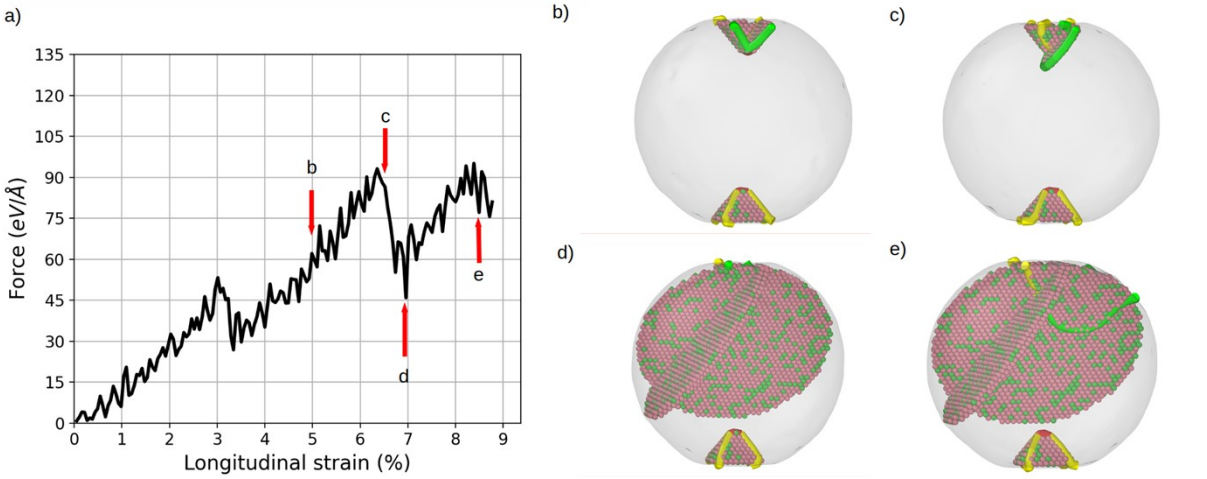


**Figure S7** (a) Dislocation density and force-strain curve of random mix $Co_{75}Ni_{25}$. Snapshots at: (b) 5.0%, (c) 6.41%, (d) 7.0%, and (e) 8.5% of longitudinal strain. Shockley partial, Hirth, and Other dislocation are represented by a green, yellow, and red lines, respectively; Co hcp atoms are represented by pink spheres, whereas Ni hcp atoms are represented by green spheres, while fcc atoms are omitted for clarity.

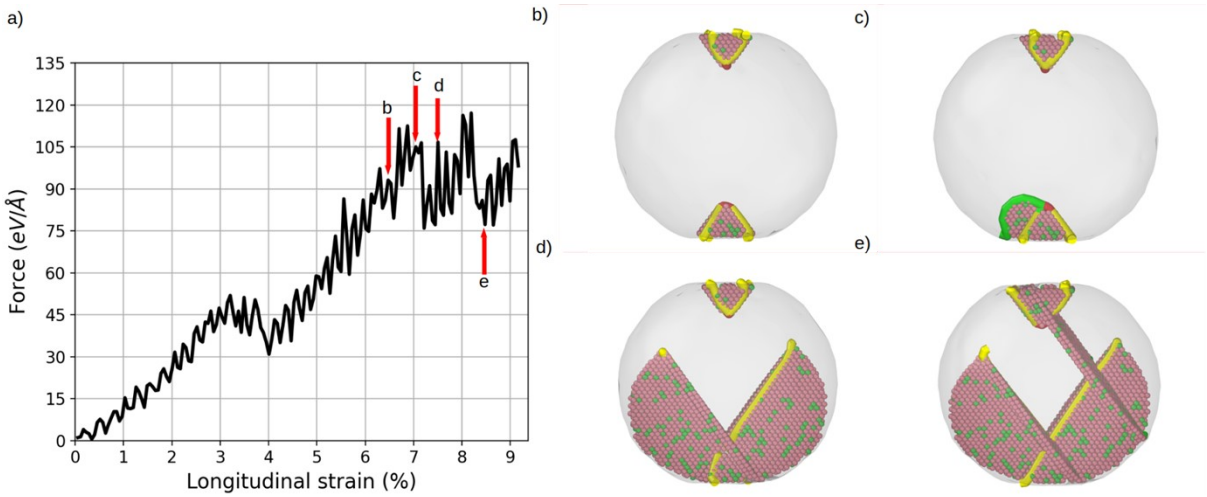


**Figure S8** (a) Dislocation density and force-strain curve of random mix $Co_{87.5}Ni_{12.5}$. Snapshots at: (b) 6.5%, (c) 7.0%, (d) 7.5%, and (e) 8.5% of longitudinal strain. Shockley partial, Hirth, and Other dislocation are represented by a green, yellow, and red lines, respectively; Co hcp atoms are represented by pink spheres, whereas Ni hcp atoms are represented by green spheres, while fcc atoms are omitted for clarity.