

Electronic Supplementary Information for

Beyond conventional nonlinear fracture mechanics in graphene nanoribbons

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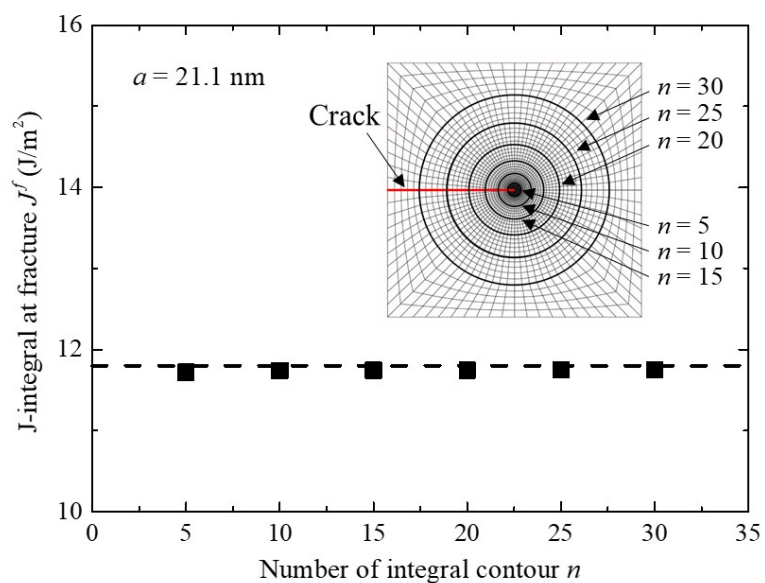


Figure S1. J-integral at fracture J^f as a function of number of integral contour n around the crack tip for the specimen of $a = 21.1 \text{ nm}$.

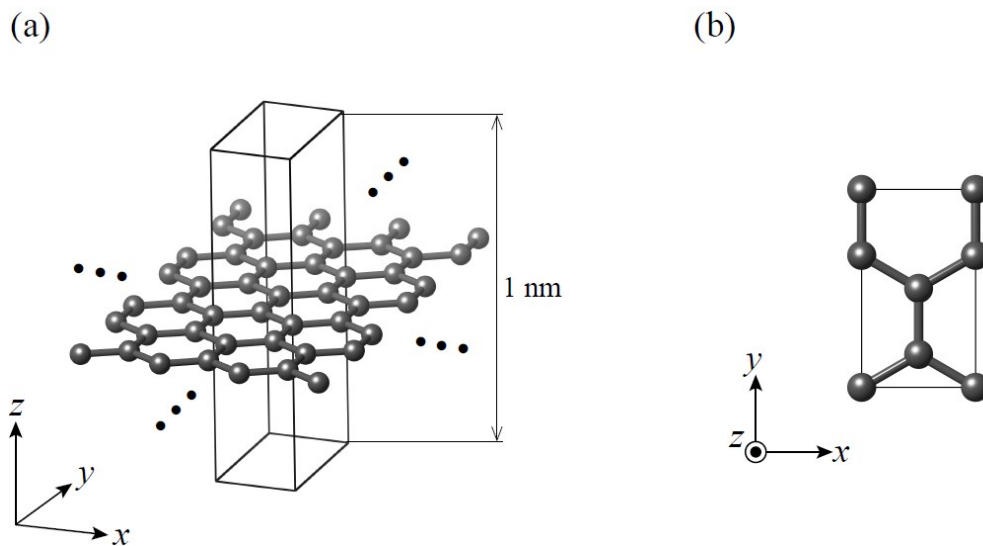


Figure S2. Simulation model of single-layer pristine graphene. (a) 3-dimensional view of the model. (b) Unit cell of the model with a view from z axis direction.

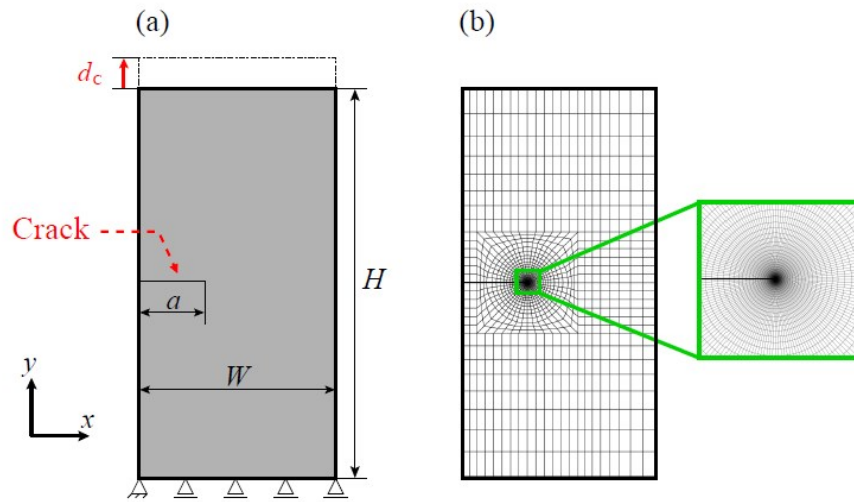


Figure S3. Finite element models of pre-cracked graphene nanoribbon specimens for stress analysis.