

Supporting Online Materials

Substrate-Free Self-Assembly Approach Toward Large-Area Nanomembranes

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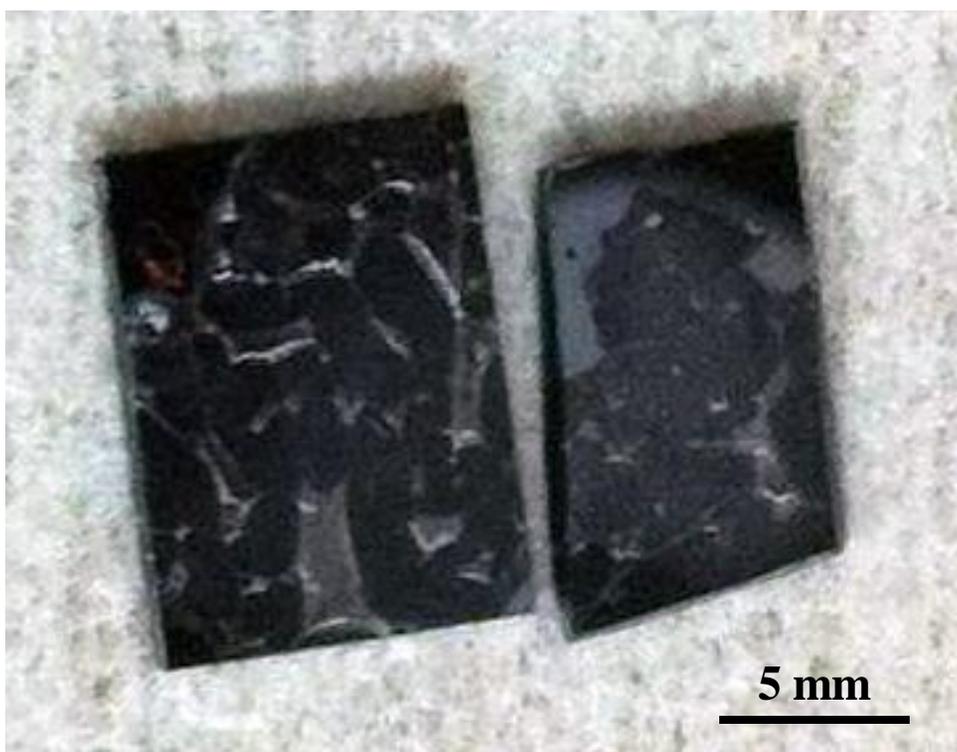


Figure S1. A photo of as-synthesized ZHDS NMs after being transferred to Si substrates. The NMs showed great mechanical integrity and flexibility. The NMs remain intact after transfer, although some areas bubbled up due to the residue air in between the substrates and the NMs.

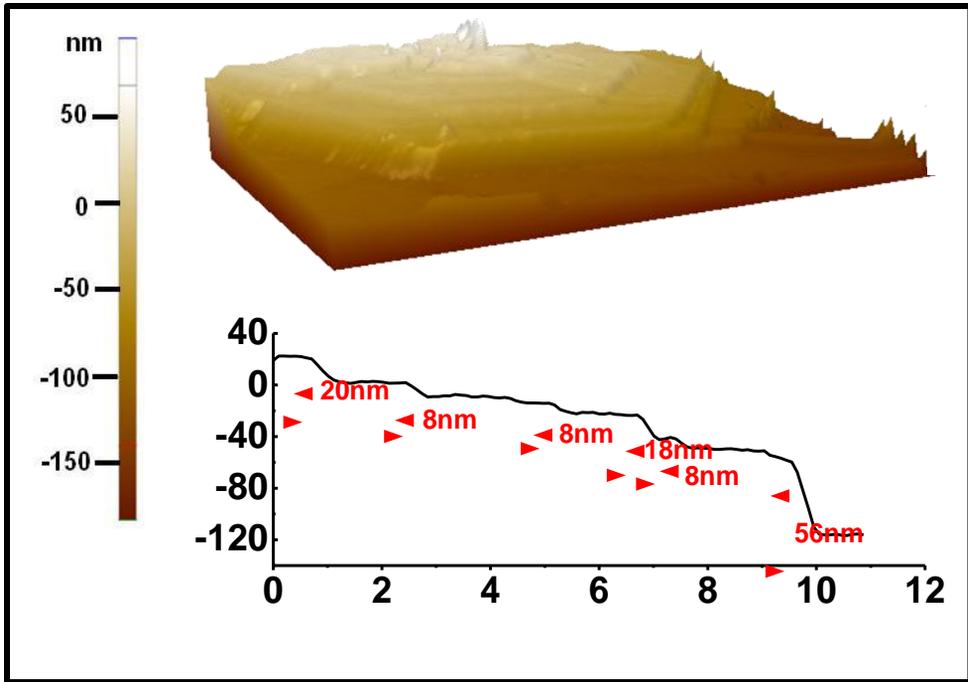


Figure S2. Topographic scan of ZHDS nanomembrane by atomic force microscopy (AFM), in which the hillock steps are 8nm or 8nm multiples.

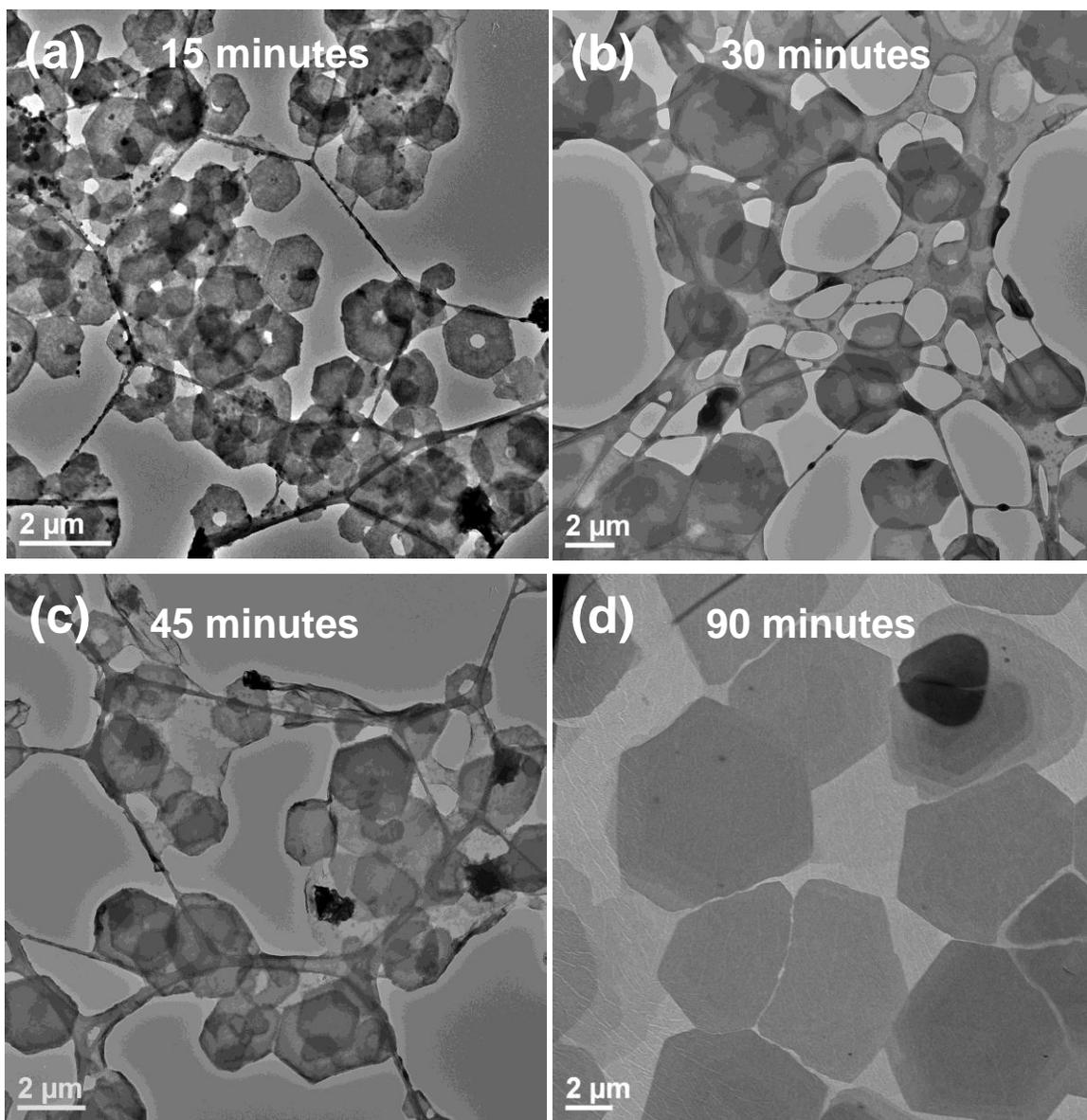


Figure S3. Transmission electron microscopy images of the single crystal ZHDS at (a) 15 mins (b) 30 mins and (c) 45 mins after initiation of reaction;

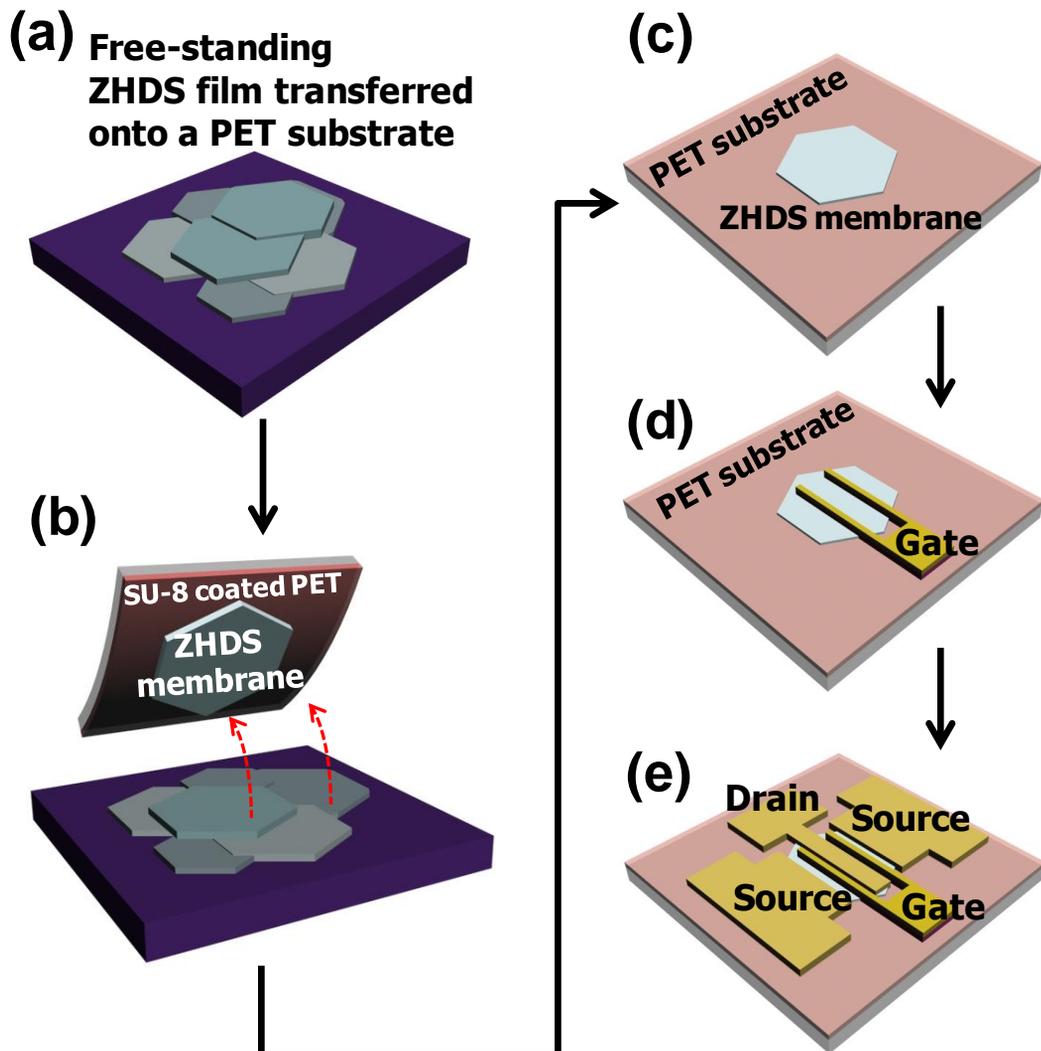


Figure S4. Illustration of the processes of ZHDS NM transfer onto a flexible substrate and field-effect transistor fabrication (a) Beginning from the free-standing ZHDS membranes which were scooped from water surface on Si substrate (b) Transfer single ZHDS membrane to the PET substrate with assistance of adhesive layer (SU-8 2002) (c) Curing adhesive layer by UV exposure (17mW, 320nm for 3min.) (d) Deposition of dielectric layer (100nm of SiO_x) and gate metal (5nm/150nm of Ti/Au) by e-beam evaporation (e) Subsequent evaporation of source and drain electrodes (5nm/200nm of Ti/Au) by e-beam evaporation