Supporting Information for

Metastable $Ge_{1-x}C_x$ Alloy Nanowires

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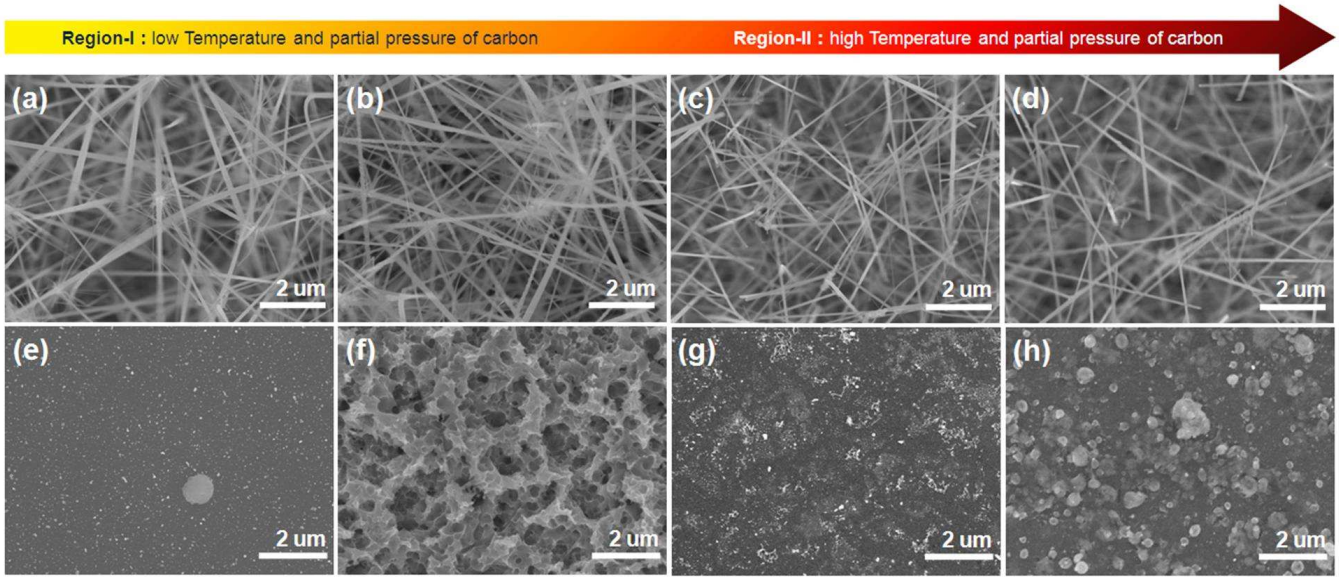

Fig. S1. SEM images of $Ge_{1-x}C_x$ alloy NWs before (a, b, c, and d) and after the selective Ge etching process (e, f, g, and h); $Ge_{1-x}C_x$ alloy NWs grown at (a and e) 300 °C, P_{CH_4} = 3 Torr. (b and f) 320 °C, P_{CH_4} = 3 Torr. (c and g) 410 °C, $P_{C_2H_2}$ = 8 Torr. (d and h) 430 °C, $P_{C_2H_2}$ = 8 Torr.

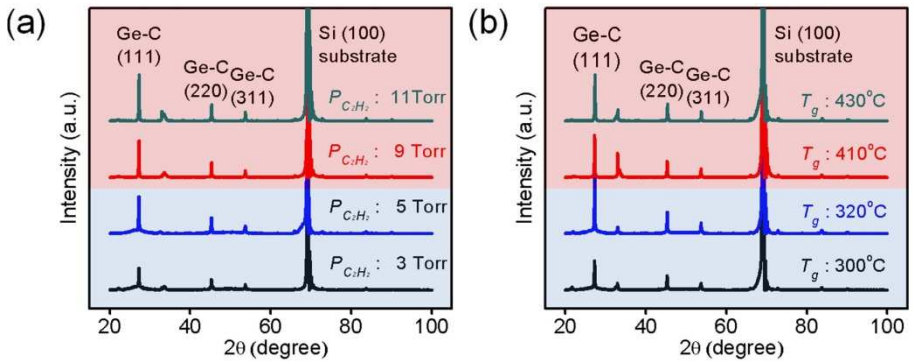

Fig. S2. Variation in X-ray diffraction pattern for $Ge_{1-x}C_x$ alloy NWs grown under various conditions; (a) Region-I (blue) P_{CH_4} = 3 Torr and 5 Torr at 320 °C, Region-II (red) $P_{C_2H_2}$ = 9 Torr and 11 Torr at 430

°C. (b) Region-I (blue) P_{CH_4} = 5 Torr at 300 °C and 320 °C, and Region-II (red) $P_{C_2H_2}$ = 8 Torr at 410 °C and 430 °C.

The lattice constant (a) of the alloy NWs was obtained by the following equation:

$$a = \frac{\lambda}{2\sin\theta}\sqrt{h^2 + k^2 + l^2}$$

where a and λ (Cu Ka radiation (λ =0.15406 nm)) are the lattice constant and the wavelength, respectively (h, k, and l are the plane indices).