

Supporting Information

Fabrication of Epoxy/Silicon Nitride Nanowire Composites and Evaluation of Their Thermal Conductivity

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In this work, to measure the thermal conductivity perpendicular to the hot-press direction, the laminated samples were prepared. Two methods have been reported for measuring the thermal conductivity of the in-plane direction in disk samples: to use an “in-plane holder” and a laminated sample. Since the former needs artificial adjustment, the latter method was used here because it is more reliable and common. Figure S1 shows the preparation process of the laminated sample. (1) The hot-pressed disk-shaped composite sample of 15-mm diameter and 1.5-mm thick was cut into rectangular bars with 1.2-mm width. (2) The rectangular bars of 1.2-mm width and 1.5-mm thick were placed vertically so that the cut side might turn into an up-and-down side. (3) Then, the rectangular bars were bonded to each other. (4) The 1.2-mm thick bonded sample was ground into 1 mm-thick and cut into a 10 mm × 10 mm square. The thermal diffusivity along the thickness direction was measured.

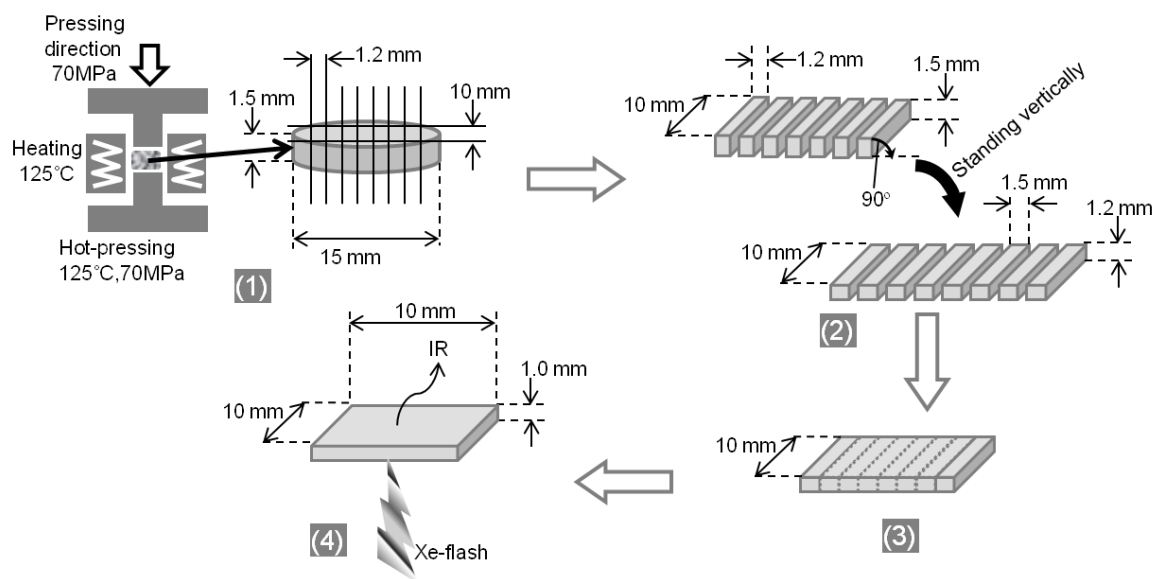


Figure S1. Preparation of the laminated sample for measuring the thermal diffusivity perpendicular to the hot-press direction.

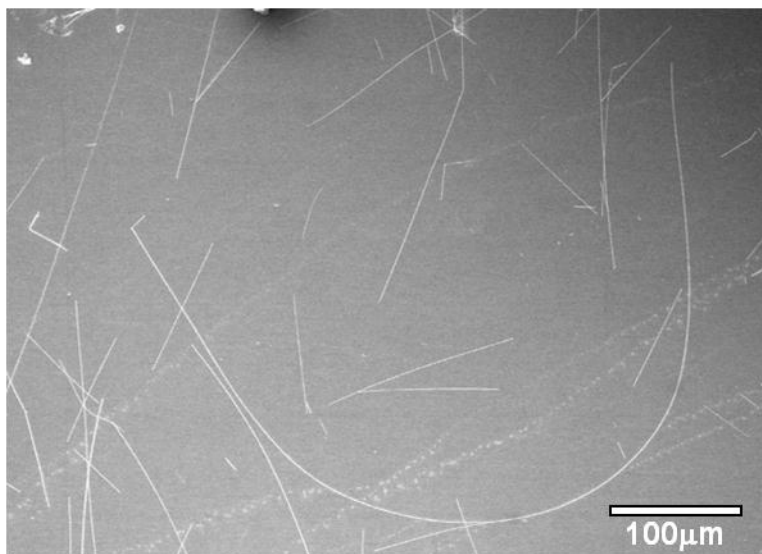


Figure S2. SEM photograph of Si₃N₄ nanowire (figure 6 (B)) broken from the nonwoven structure by ultrasonic vibration.