

Electronic Supplementary Information (ESI)

Prismatic Ta₃N₅-composed spheres produced by self-sacrificial template-like conversion of Ta particles via Na₂CO₃ flux

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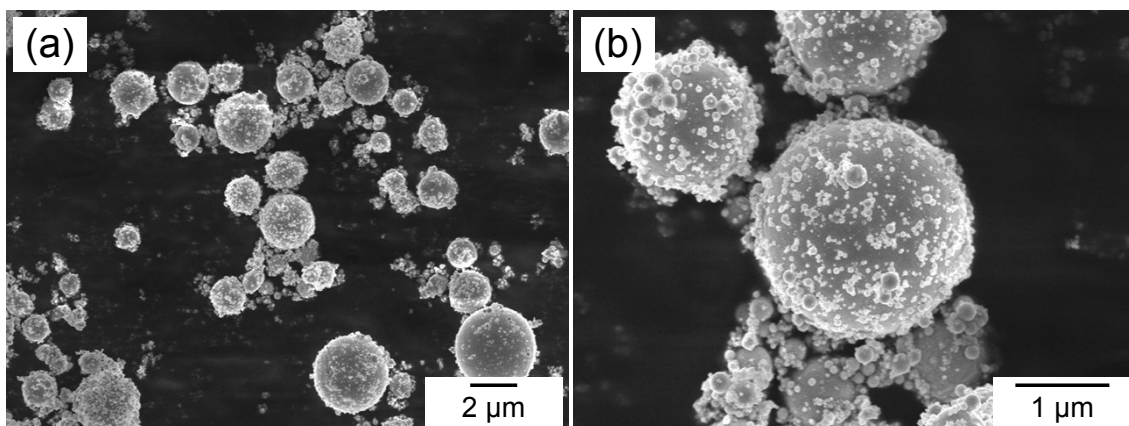


Fig. S1 (a) Low- and (b) high-magnification SEM images of small Ta powder.

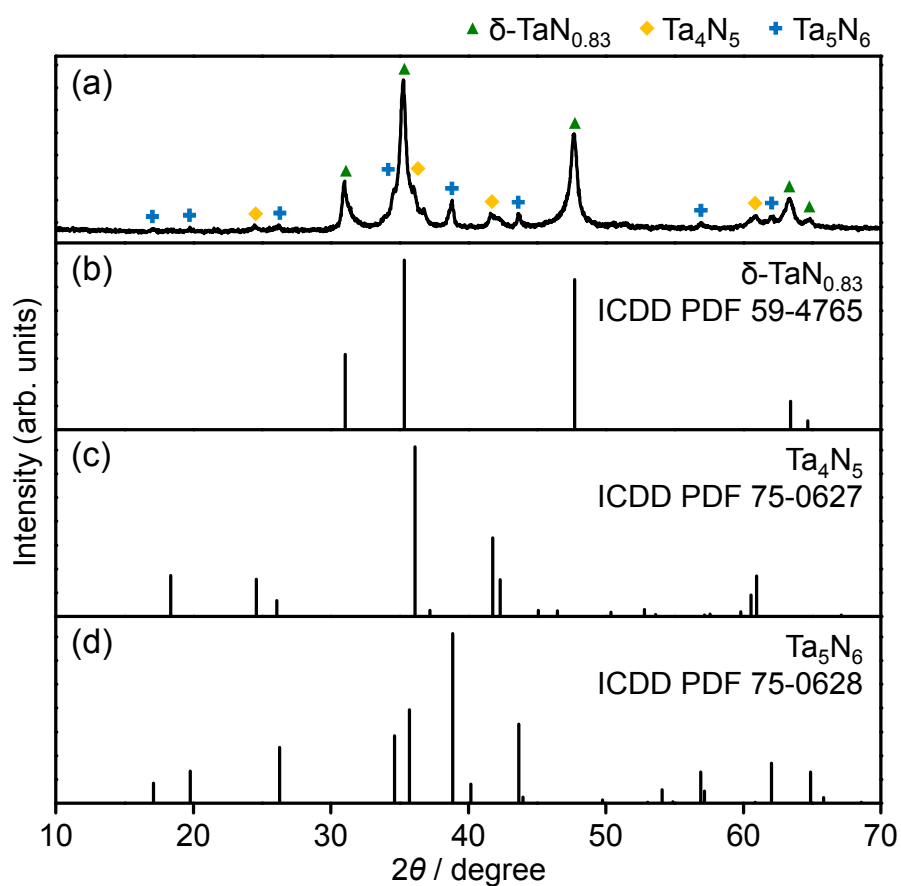


Fig. S2 (a) XRD patterns of powders heated under NH_3 flow without flux; and the ICDD PDFs of (b) $\delta\text{-TaN}_{0.83}$, (c) Ta_4N_5 , and (d) Ta_5N_6 .

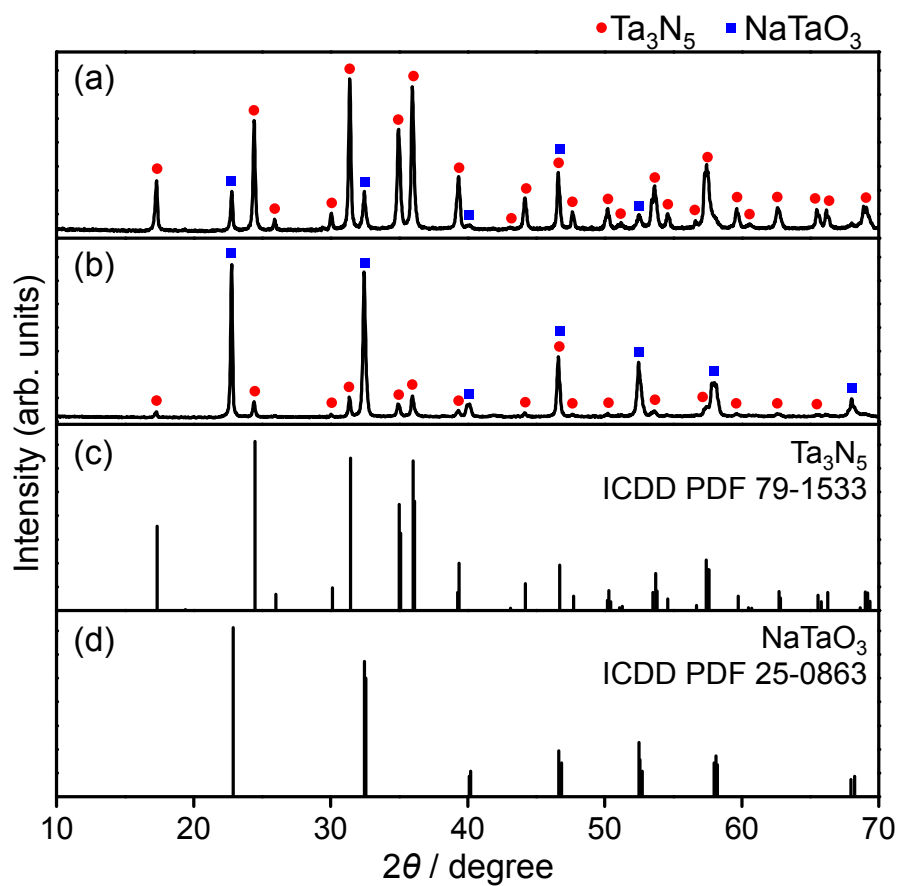


Fig. S3 XRD patterns of the crystals grown at Ta concentrations of (a) 80 and (b) 50 mol%; and the ICDD PDFs of (c) Ta_3N_5 and (d) NaTaO_3 .

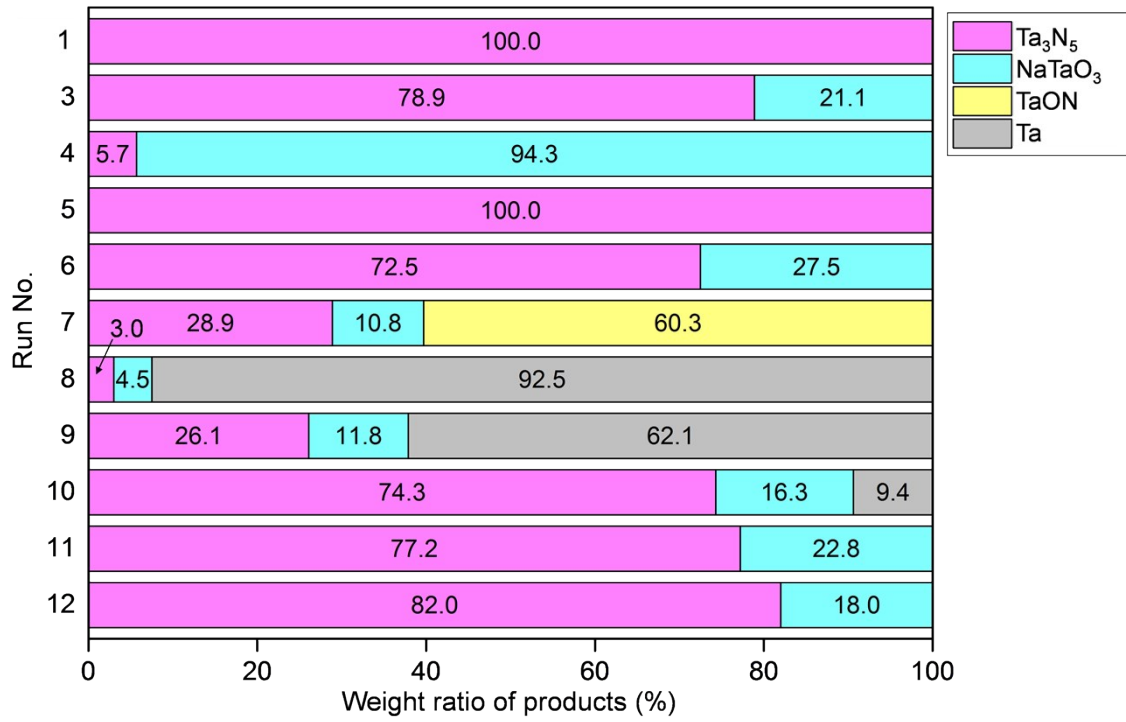


Fig. S4 Weight ratio of the crystalline phases of the products estimated using the RIR method. The run nos. shown in this figure correspond to the run nos. in Table 1.

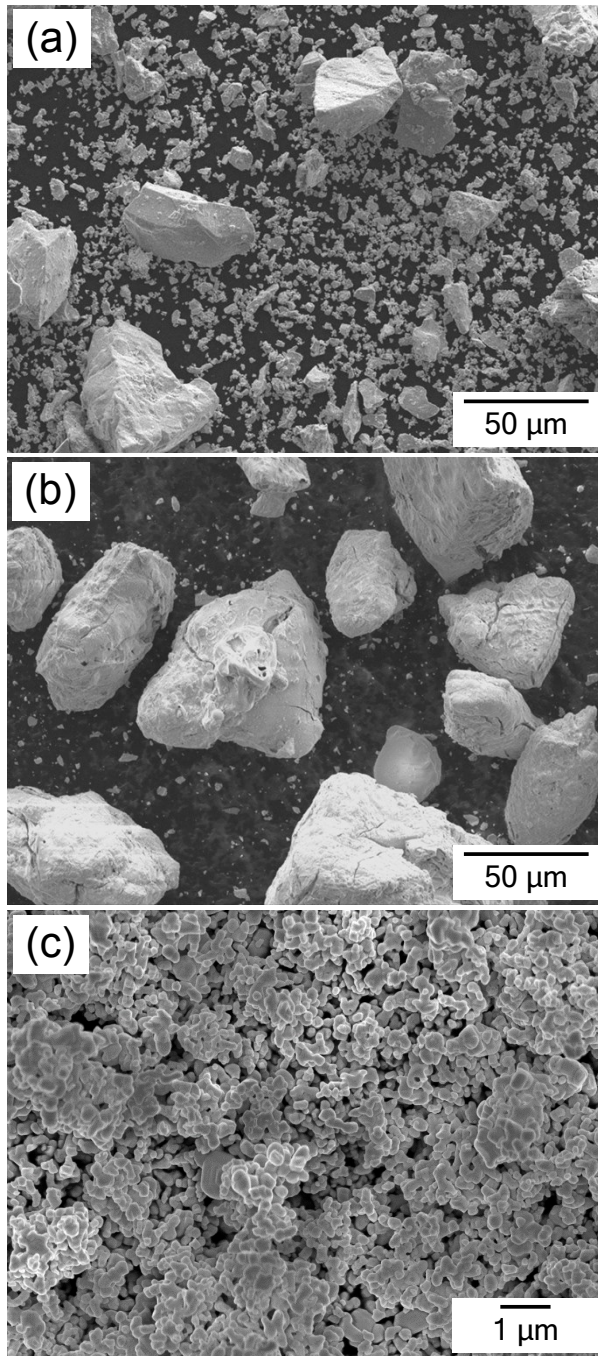


Fig. S5 SEM images of the (a) large Ta, (b) TaCl₅, and (c) Ta₂O₅ powders.

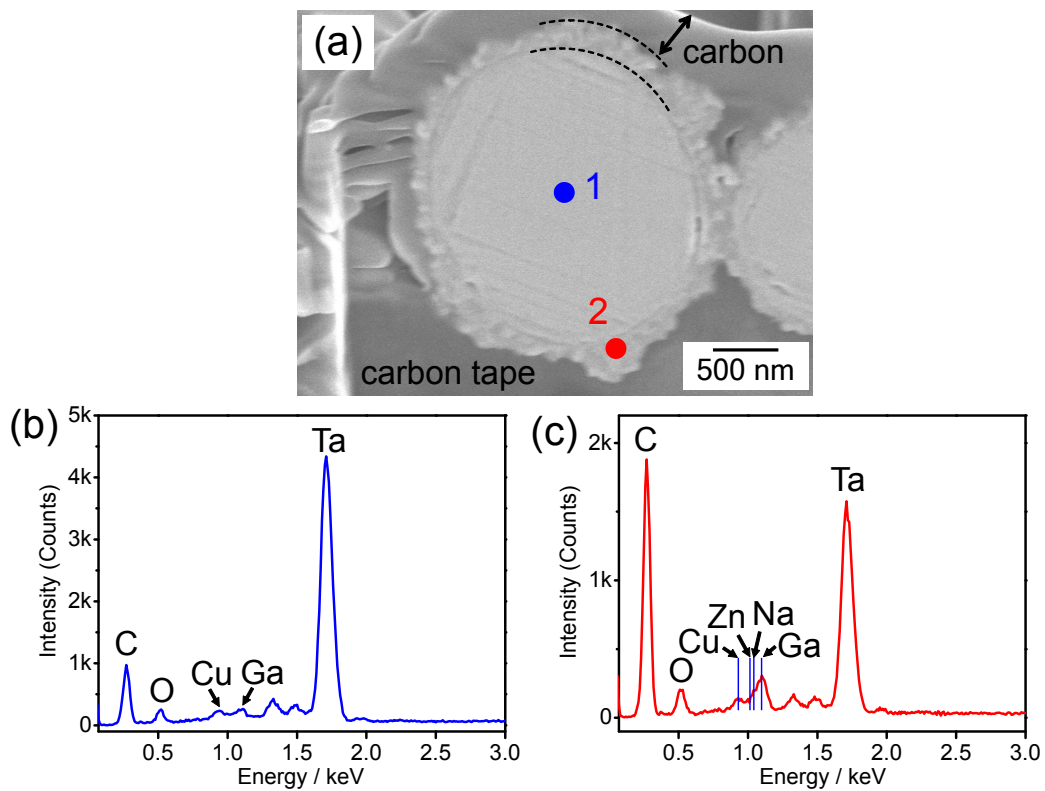


Fig. S6 (a) Cross-sectional SEM image and (b and c) corresponding EDS point analyses of the crystals grown using small Ta powder at 600 °C for 0 h. Cu and Zn were detected from the sample stage for FESEM observation, while Ga contamination occurred during FIB milling with a Ga-ion source.

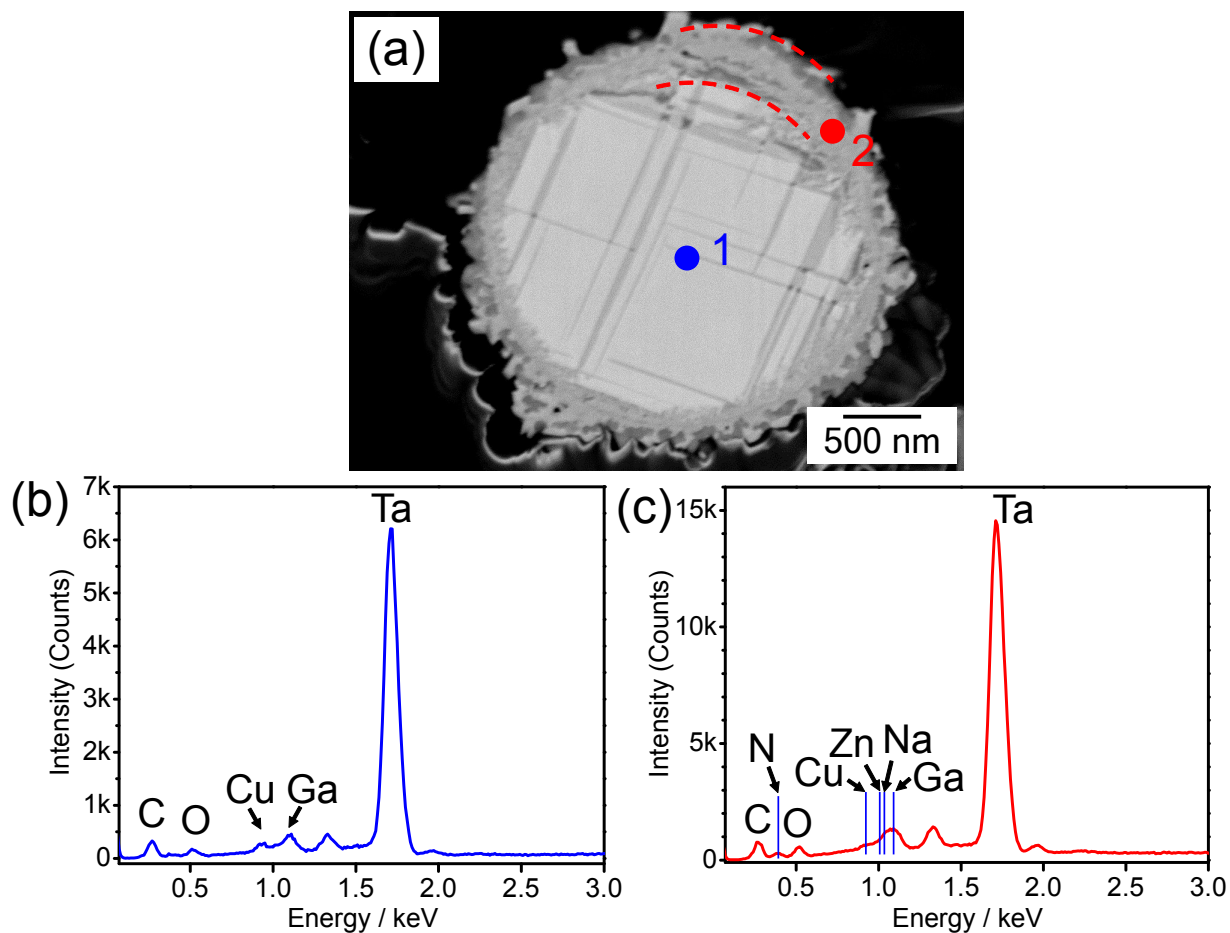


Fig. S7 (a) Cross-sectional SEM composition image and (b and c) the corresponding EDS point analyses of the crystals grown using small Ta powder at 700 °C for 0 h. Cu and Zn were detected from the sample stage for FESEM observation, while Ga contamination occurred during FIB milling with a Ga-ion source.

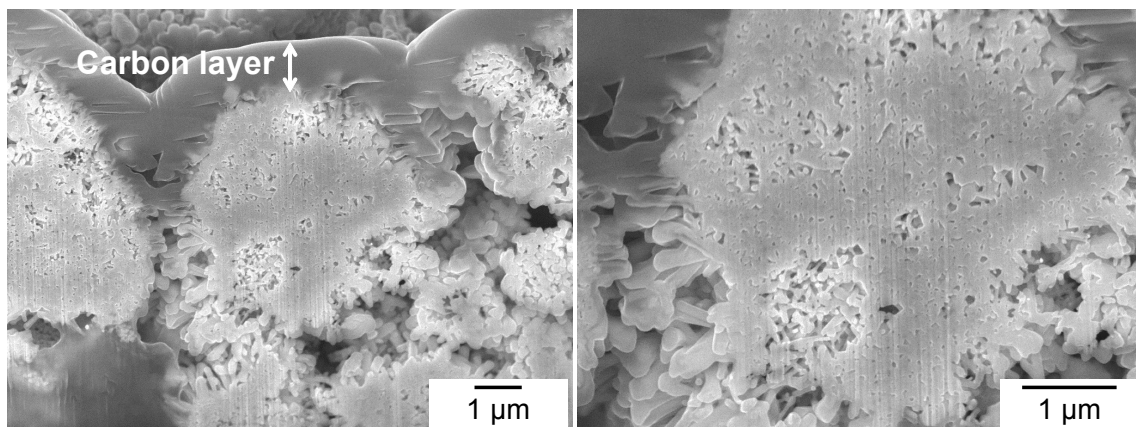


Fig. S8 (a) Low- and (b) high-magnification cross-sectional SEM images of the crystals grown using the large Ta powder.