Supplementary Information

Fabrication of Plate-like Ta_3N_5 Crystals through an Evaporation-Deposition-Re-evaporation of Alkali Halide Fluxes onto Tantalum Substrates

*Hajime Wagata,[1,2] Minori Yanai,[3] Daewook Kim,[4] Sayaka Suzuki,[2,3] Mirabbos Hojamberdiev,[2,5] Kunio Yubuta,[6] Chiaki Terashima[4,7] and Katsuya Teshima[2,3,4,7]**

[1]Department of Applied Chemistry, School of Science and Technology, Meiji University, Kawasaki 214-8571, Japan

[2]Department of Environmental Science and Technology, Faculty of Engineering, Shinshu University, Nagano 380-8553, Japan

[3]Department of Materials Chemistry, Faculty of Engineering, Shinshu University, Nagano 380-8553, Japan

[4]Research Initiative for Supra-Materials, Shinshu University, Nagano 380-8553, Japan

[5]Institut für Chemie, Technische Universität Berlin, Straße des 17. Juni 135, 10623, Berlin, Germany

[6]Institute for Materials Research, Tohoku University, Sendai 980-8577, Japan

[7]Research Center for Space Colony, Tokyo University of Science, Chiba 278-8510, Japan

Tel.: +81-26-269-5556

Fax: +81-26-269-5550

*E-mail address of corresponding author: teshima@shinshu-u.ac.jp

Table S1. Experimental conditions for the growth of Ta_3N_5 crystals by evaporation-deposition-re-evaporation of alkali halide fluxes.

Run No.	Flux (Molar Ratio)	Flux / g			Holding Temp. / °C	Holding Time / h
		KF	KCl	KI		
1	KF (100)	0.500	—	—	900	1
2	KCl (100)	—	0.500	—	900	1
3	KI (100)	—	—	0.500	900	1
4	KF-KI (55.2:44.8)	0.151	—	0.349	900	1
5	KF-KI (55.2:44.8)	0.151	—	0.349	800	0
6	KF-KI (55.2:44.8)	0.151	—	0.349	900	0
7	KF-KI (55.2:44.8)	0.151	—	0.349	800	1

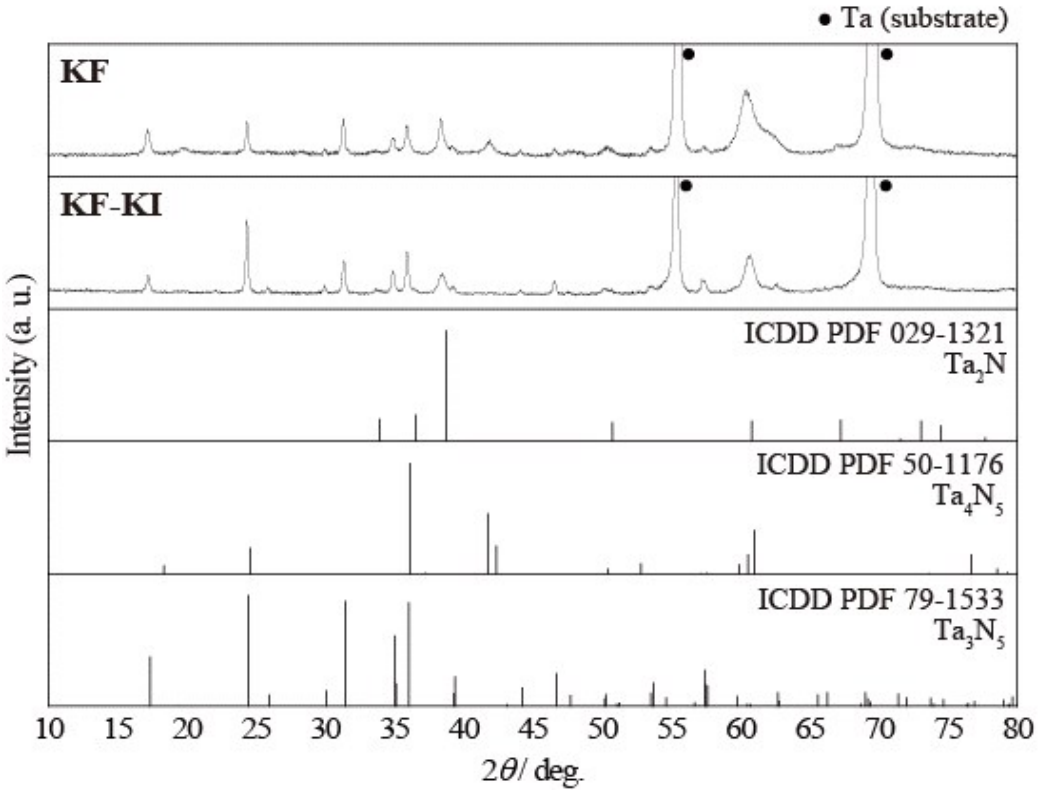

Figure S1. XRD patterns of crystal layers fabricated at 900°C for 1 h using KF and KF-KI fluxes, and reference peaks of Ta_2N, Ta_4N_5 and Ta_3N_5.

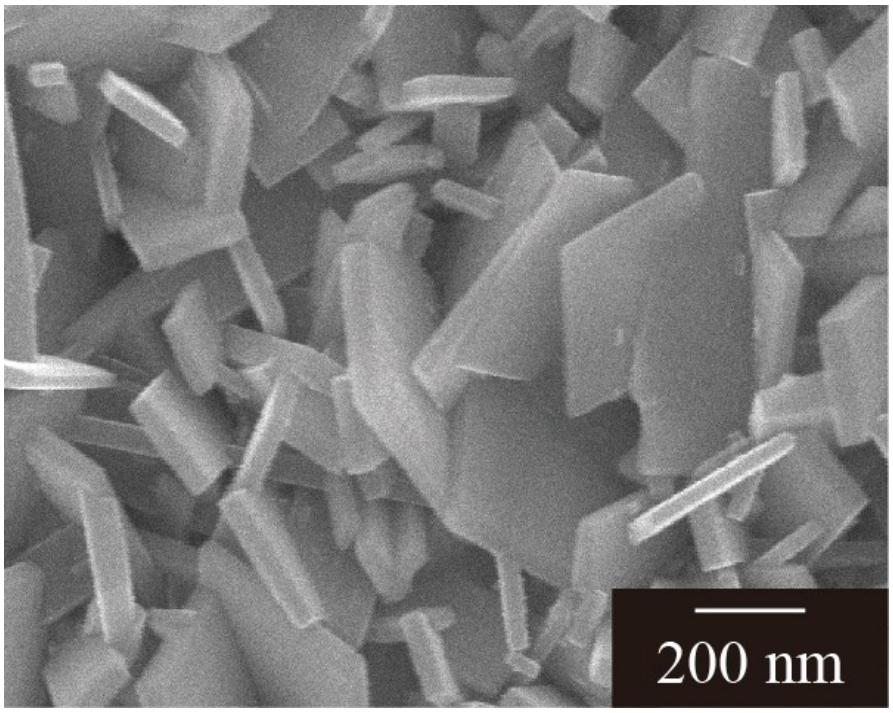

Figure S2. High-magnification surface SEM image of the Ta_3N_5 crystal layer grown by evaporation-deposition-re-evaporation of the KF-KI flux.

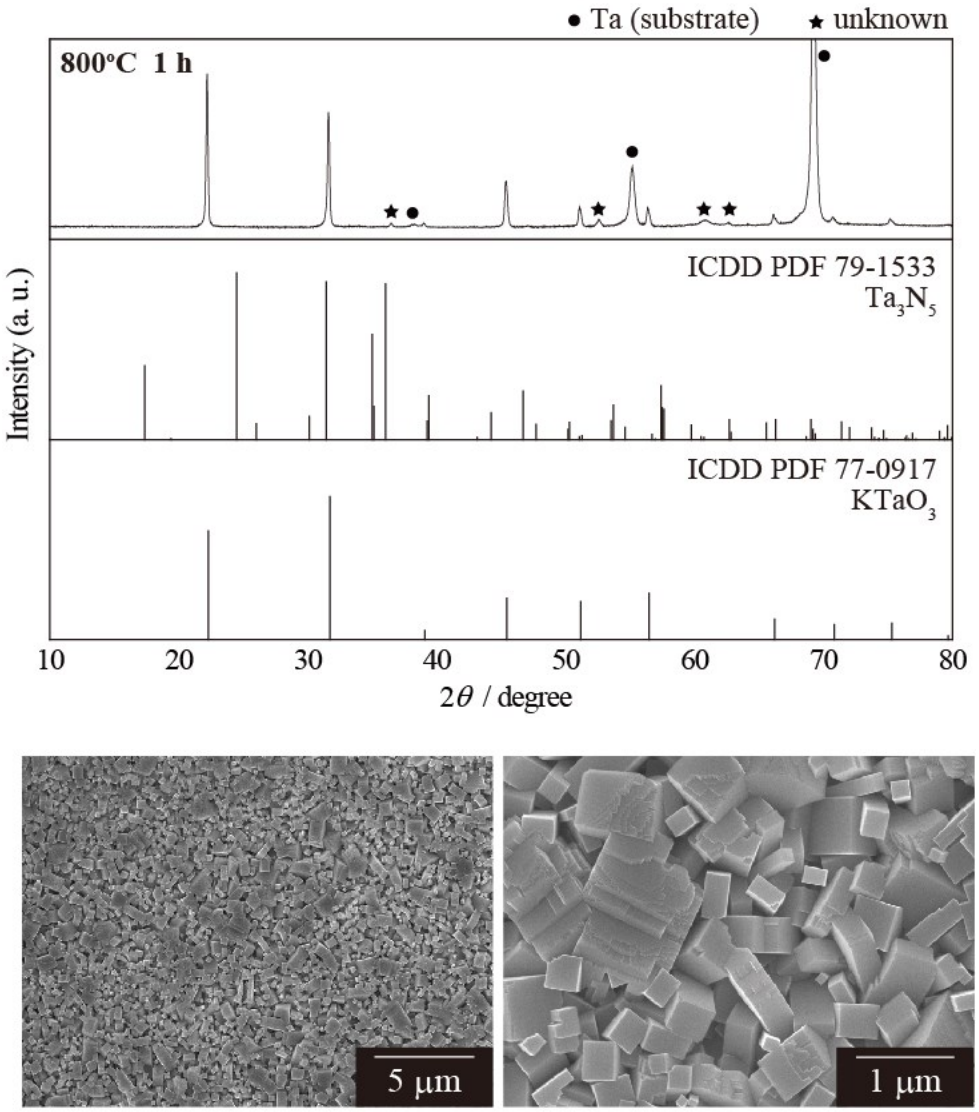

Figure S3. XRD pattern and surface SEM images of crystal layer grown at 800°C for 1 h using the KF-KI flux.