Preparation of Crystallized Mesoporous Ta₃N₅ Assisted by Chemical Vapor Deposition of Tetramethyl Orthosilicate

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Figure S1. Pore size distribution curves for (a) the amorphous precursor, (b) the silica-coated mesoporous Ta$_2$O$_5$, (c) the silica-coated mesoporous Ta$_3$N$_5$ after nitridation, and (d) the mesoporous Ta$_3$N$_5$ after alkaline treatment, and (e) the sample nitrided without silica layer. Nitridation temperature: 1073 K, nitridation time: 7 h, alkaline treatment temperature: room temperature, alkaline treatment time: 4 h.
Figure S2. UV-Vis. diffuse reflection spectra of silica-coated crystallized mesoporous Ta$_3$N$_5$ (a) before and (b, c) after alkaline treatment. Alkaline treatment time: (b) 0.75 h and (c) 4 h. The spectrum of bulk Ta$_3$N$_5$ is shown by dashed line for reference.
Figure S3. Dependence of specific surface area and pore volume of nitridation products on nitridation temperature. Nitridation time: 15 h.
Figure S4. Dependence of specific surface area and pore volume of nitridation products on nitridation time. Nitridation temperature: 1073 K.
Figure S5. UV-Vis. diffuse reflection spectra of the nitridation products before alkaline treatment. Nitridation time: (a) 0.5 h, (b) 3 h, (c) 5 h, (d) 7 h, (e) 15 h and (f) 30 h. Nitridation temperature: 1073 K. The spectrum of bulk Ta₃N₅ is shown by dashed line for reference.
Figure S6. A TEM image of mesoporous Ta$_3$N$_5$ loaded with 0.05 wt% Pt by the photodeposition method.