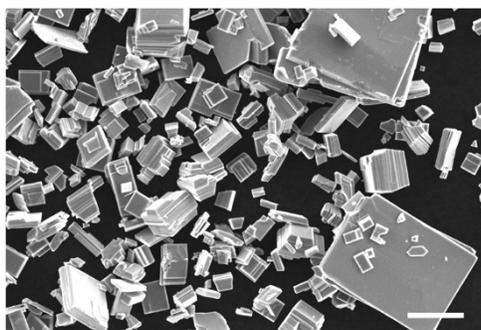


**Ammonia Uptake from Ambient Air by Protonic Layered Metal Oxide as a Cause of the Gradual Degradation of Its Swelling Reactivity**

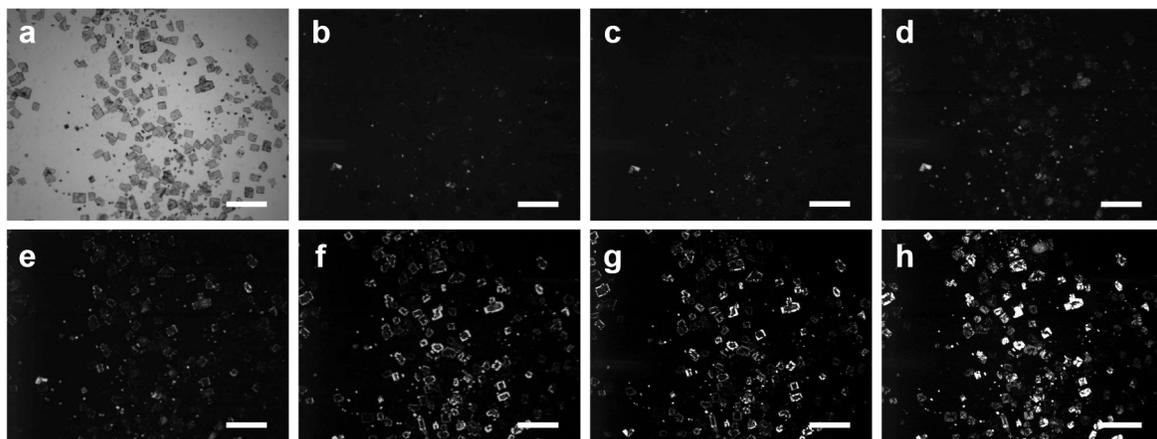
Nobuyuki Sakai,\* Ritesh Uppuluri, Nobuo Iyi, Yasuo Ebina, Renzhi Ma, and Takayoshi Sasaki

Research Center for Materials Nanoarchitectonics (MANA), National Institute for Materials Science (NIMS), 1-1 Namiki, Tsukuba, Ibaraki 305-0044, Japan

\* Corresponding author. E-mail: sakai.nobuyuki@nims.go.jp



**Figure S1.** SEM image of HCa<sub>2</sub>Nb<sub>3</sub>O<sub>10</sub>·1.5H<sub>2</sub>O crystals. Scale bar indicates 50  $\mu$ m.



**Figure S2.** (a) Normal and (b-g) polarized optical microscopy images of  $\text{HCa}_2\text{Nb}_3\text{O}_{10} \cdot 1.5\text{H}_2\text{O}$  crystals after exposure to ambient air for (a, b) 0, (c) 1, (d) 3, (e) 7, (f) 14, (g) 21, and (h) 49 days. Scale bars represent 500  $\mu\text{m}$ .