

Moisture-induced degradation and its mechanism of (Sr,Ca)AlSiN₃:Eu²⁺, a red-color-converter for solid state lighting

Jie Zhu^{a,b}, Rong-Jun Xie^{a,c*}, Tianliang Zhou^c, Yujin Cho^{d,e}, Takayuki Suehiro^a, Takashi Takeda^a,
Ming Lu^b, Takashi Sekiguchi^{d,e}, Naoto Hirosaki^a

^a Sialon Group, Sialon Unit, National Institute for Materials Science, Namiki 1-1, Tsukuba, Ibaraki 305-0044, Japan.

^b School of Chemical Engineering, Nanjing University of Science and Technology, 200 Xiao Ling Wei, Nanjing, Jiangsu 210094, China.

^c College of Materials, Xiamen University, Xiamen, Fujian 361005, China.

^d Nano Device Characterization Group, National Institute for Materials Science, Namiki 1-1, Tsukuba, Japan.

^e Graduate School of Pure and Applied Science, University of Tsukuba, Tenodai 1-1-1, Tsukuba, Ibaraki 305-8571, Japan.

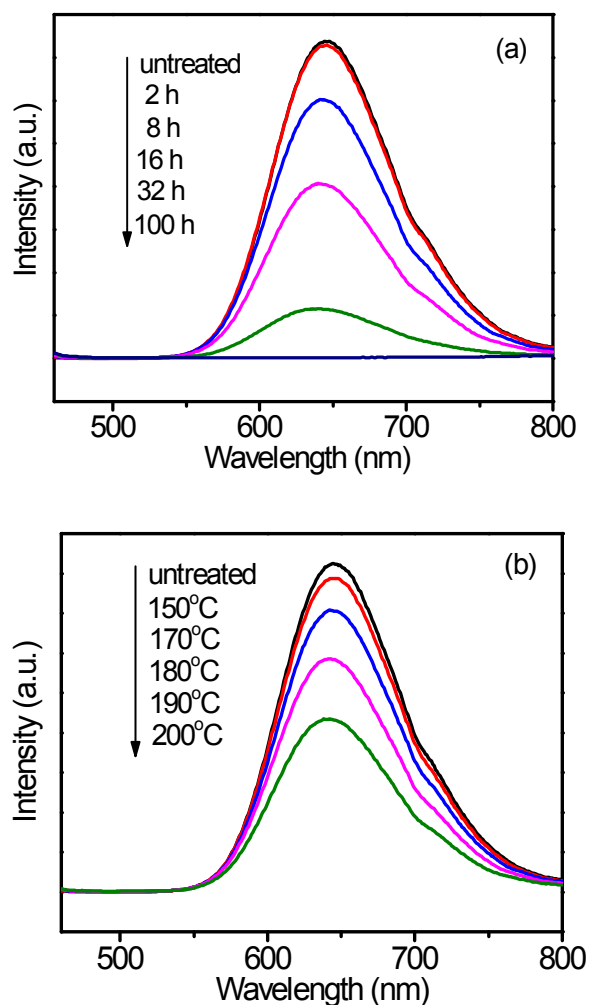


Figure S1 Emission spectra of SCASN treated in moisture (a) at 200°C for different time periods; (b) for 16 h at different temperature. Samples were excited at $\lambda_{em} = 450$ nm

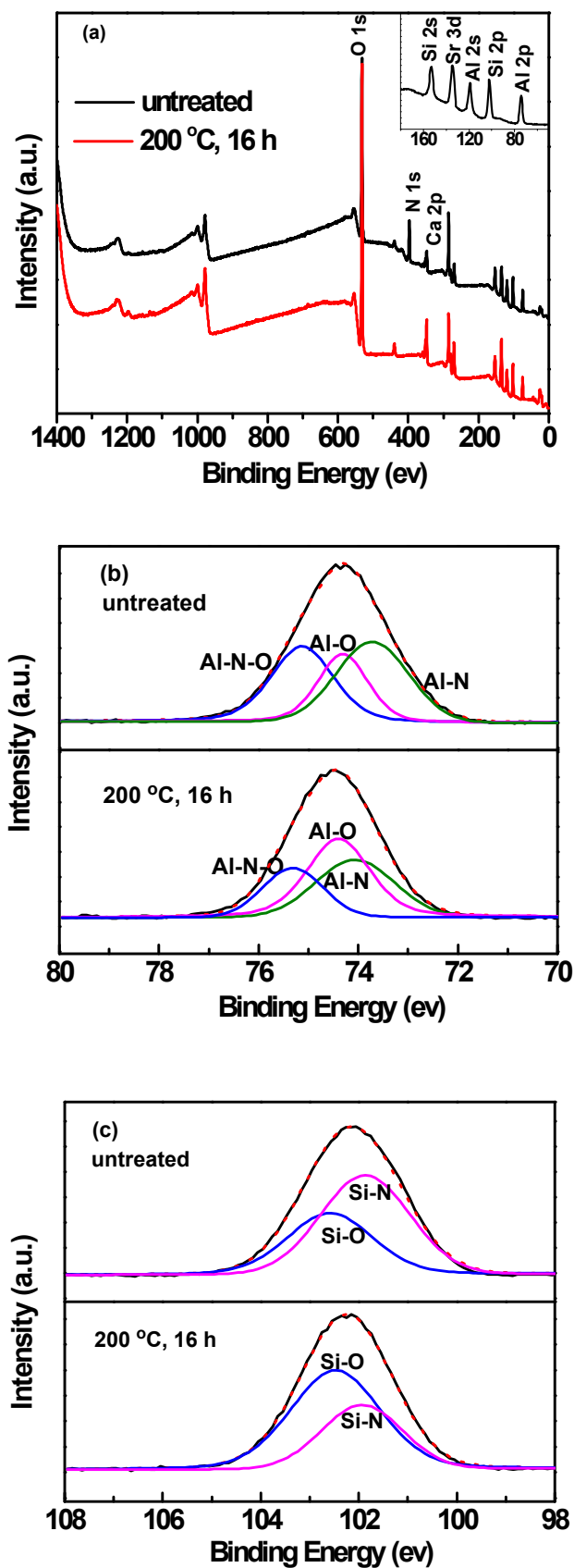


Figure S2 Wide scan spectra of SCASN before and after treatment (a) and XPS spectra of Al 2p (b), Si 2p (c) respectively.