

Supporting Information

Energy focusing reinforced narrowband ultraviolet-B mechanoluminescence for bright-field stress visualization

Xiuxia Yang^{a,c}, Dongxun Chen^d, Yanjie Liang^d, Su Zhou^{a,c}, Ju Xu^a, Lin Liu^{a,c}, Hang Lin^{a,b}, Yan Xiong^e, Yao Cheng^{a}, Yuansheng Wang^{a*}*

a. Key Laboratory of Optoelectronic Materials Chemistry and Physics, Key Laboratory of Design and Assembly of Functional Nanostructures, Fujian Institute of Research on the Structure of Matter, Chinese Academy of Sciences, Fuzhou, Fujian, 350002, P. R. China.

b. Fujian Science & Technology Innovation Laboratory for Optoelectronic Information of China, Fuzhou, Fujian 350108, P. R. China.

c. University of Chinese Academy of Sciences, Beijing, 100049 China.

d. Key Laboratory for Liquid-Solid Structure Evolution and Processing of Materials, Ministry of Education, Shandong University, Jinan 250061, P. R. China

e. School of Materials & Chemical Engineering, Hubei Province Key Laboratory of Green Materials for Light Industry, Hubei University of Technology, Wuhan 430068, P. R. China

Corresponding Author: Yao Cheng E-mails: chengyao@fjirsm.ac.cn

Corresponding Author: Yuansheng Wang E-mails: yswang@fjirsm.ac.cn

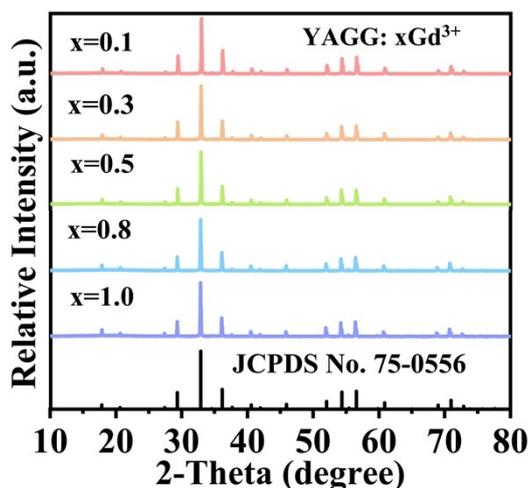


Figure S1. XRD patterns of YAGG: xGd³⁺ (x=0.1, 0.3, 0.5, 0.8, 1.0) and the standard card of JCPDS No. 75-0556, respectively.

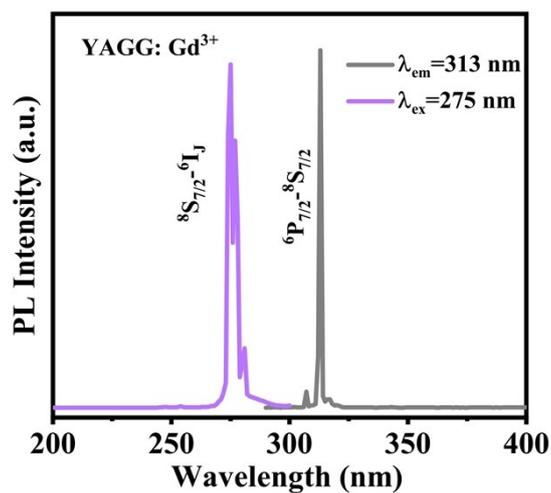


Figure S2. PL and PLE spectra of YAGG: Gd³⁺

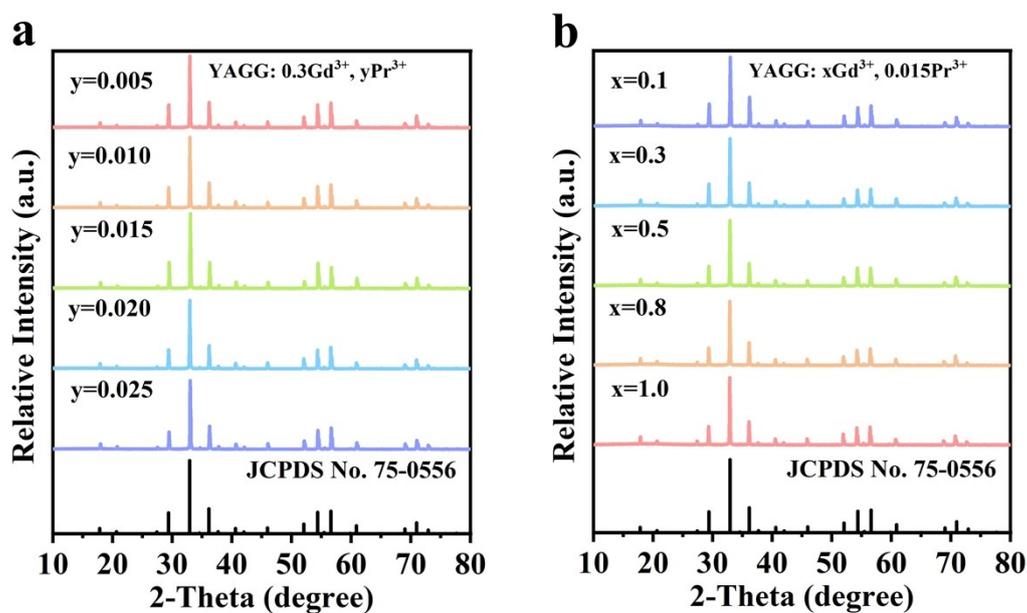


Figure S3. XRD patterns of YAGG: 0.3Gd³⁺, yPr³⁺ (y=0.005, 0.010, 0.015, 0.020, 0.025), YAGG: xGd³⁺, 0.015 Pr³⁺ (x=0.1, 0.3, 0.5, 0.8, 1.0) and the standard card of JCPDS No. 75-0556, respectively.

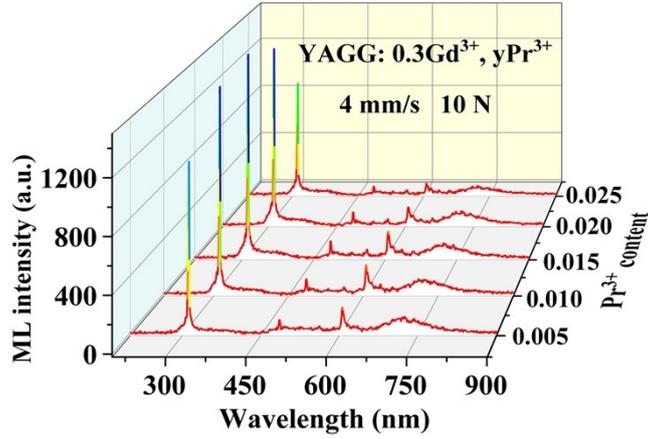


Figure S4. ML spectra of YAGG: 0.3Gd³⁺, yPr³⁺ (y=0.005, 0.010, 0.015, 0.020, 0.025).

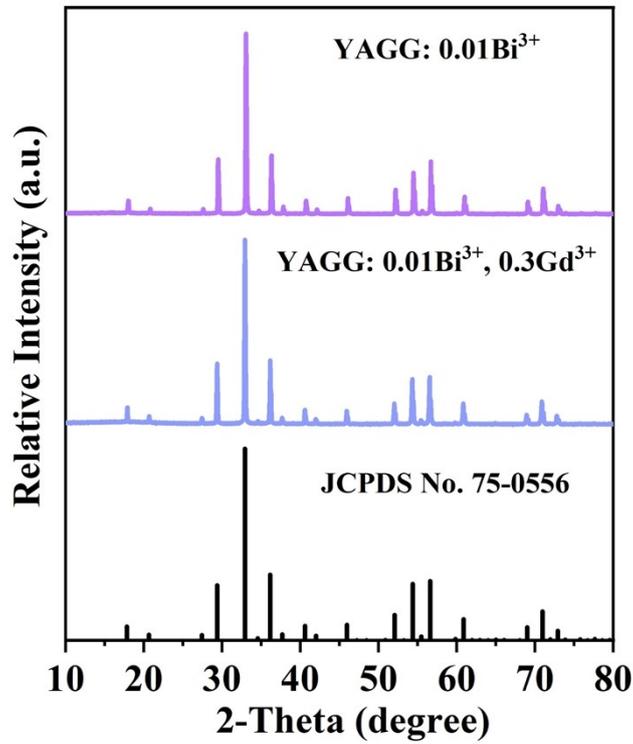


Figure S5. XRD patterns of YAGG: 0.01Bi³⁺, YAGG: 0.01Bi³⁺, 0.3Gd³⁺ and the standard card of JCPDS No. 75-0556, respectively.

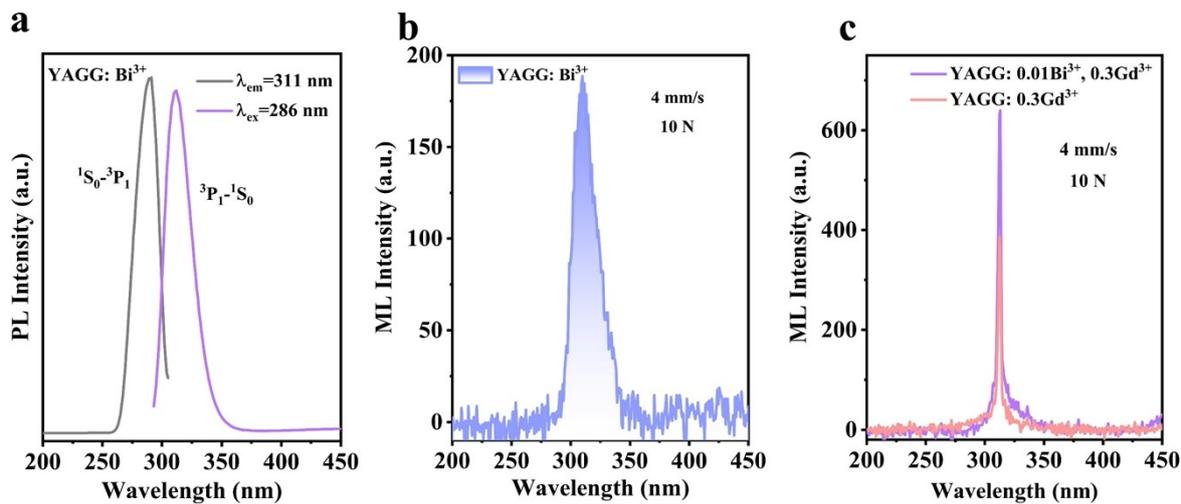


Figure S6. (a) PL and PLE spectra of YAGG: 0.01Bi³⁺; (b) ML spectrum of YAGG: 0.01Bi³⁺; (c) ML spectra of YAGG: 0.3Gd³⁺ and YAGG: 0.3Gd³⁺, 0.01Bi³⁺.

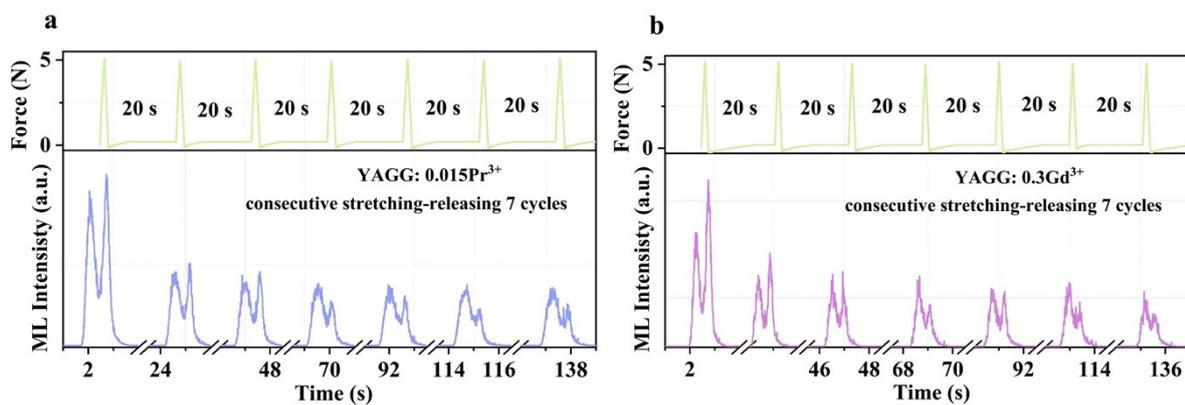


Figure S7. (a), (b) ML intensity of YAGG: 0.015Pr³⁺ and YAGG: 0.3Gd³⁺ under the consecutive stretching-releasing for 7 cycles in the applied stress of 5 N.

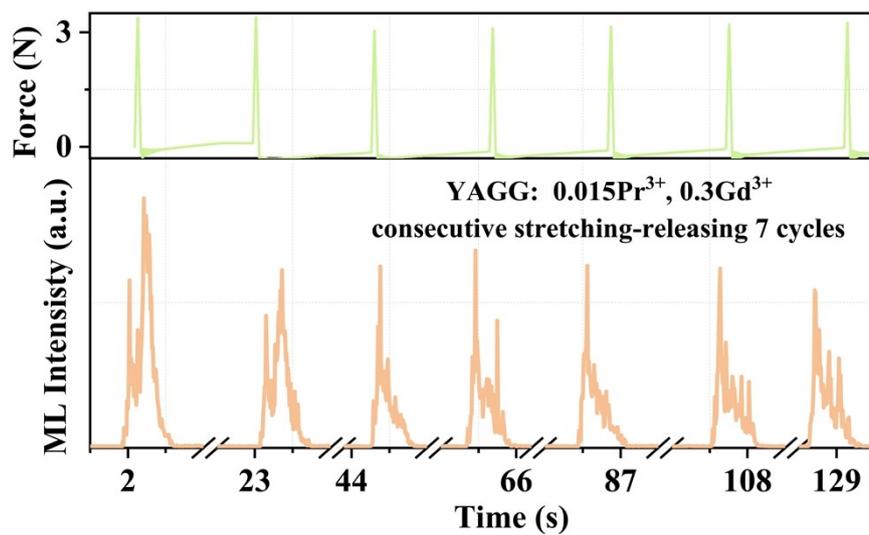


Figure S8. ML intensity of YAGG: 0.3Gd³⁺, 0.015Pr³⁺, under the consecutive S-R cycles in the applied stress of 3 N.