Supplementary Information

Fluorine-enhanced Room-temperature Luminescence of Er-doped

Crystalline Silicon

Xiaoming Wang¹, Jiajing He^{1,2,3*}, Shenbao Jin⁴, Huan Liu¹, Hongkai Li⁵, Huimin Wen¹, Xingyan Zhao¹, Roozbeh Abedini-Nassab⁶,Gang Sha⁴, Fangyu Yue⁵ and Yaping Dan^{1*}

¹ University of Michigan-Shanghai Jiao Tong University Joint Institute, Shanghai Jiao Tong University, Shanghai, 200240, China.

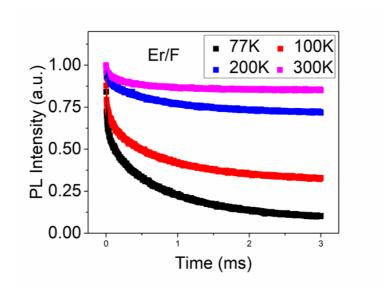
²Laboratory of Micro-Nano Optoelectronic Materials and Devices, Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences, Shanghai 201800, China.

³CAS Center for Excellence in Ultra-intense Laser Science Shanghai 201800, China

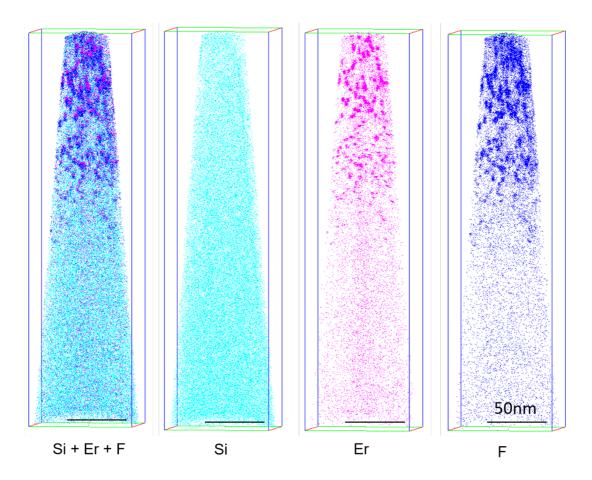
⁴ School of Materials Science and Engineering, Herbert Gleiter Institute of Nanoscience, Nanjing University of Science and Technology, Nanjing, 210094, China.

⁵ Key Laboratory of Polar Materials and Devices, Ministry of Education, East China Normal University, Shanghai, 200241, China.

⁶Faculty of Mechanical Engineering, Tarbiat Modares University, Tehran, Iran, P. O. Box: 14115-



Supplementary Figure 1. Transient decay traces at different temperatures for the Er/F: Si sample.



Supplementary Figure 2. Three-dimensional reconstruction volume of Er and F atoms of RTA-treated Er/F: Si sample obtained by APT techniques.