

1 **The emergence of red fluorescence from two dimensional Stanene oxide**  
2 **nanosheets.**

3 Nallin Sharma<sup>1</sup>, Hui-Fen Wu\*<sup>1, 2, 3, 4</sup>

4 <sup>1</sup>Department of Chemistry, National Sun Yat-Sen University, Kaohsiung, 70, Lien-Hai Road,  
5 Kaohsiung, 80424, Taiwan

6 <sup>2</sup>Doctoral Degree Program in Marine Biotechnology, National Sun Yat-Sen University,  
7 Kaohsiung, 80424, Taiwan

8 <sup>3</sup>School of Pharmacy, Kaohsiung Medical University, Kaohsiung, 800, Taiwan

9 <sup>4</sup>Institute of Medical Science and Technology, National Sun Yat-Sen University, Kaohsiung,  
10 80424, Taiwan

11 \*Corresponding author, Phone: +886-7-5252000-3955; Fax: +886-7-5253909

12 Email: [hwu@faculty.nsysu.edu.tw](mailto:hwu@faculty.nsysu.edu.tw)

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13 **Materials and methods**

14 *Materials*

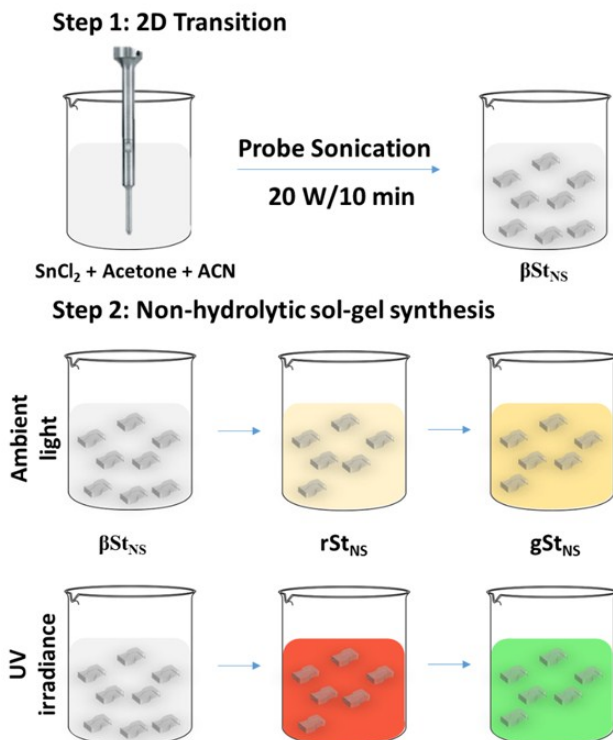
15 All the chemicals were used as purchased unless mentioned, Tin Chloride (SnCl<sub>2</sub>) was purchased from Alfa  
16 aesar, USA. Acetone and Acetonitrile used in the experiment was HPLC grade, purchased from J.T. Baker,  
17 USA.

18 *Methods.*

19 The entire synthesis of rSt<sub>NS</sub> was done as follows: 20 mg of anhydrous tin chloride (SnCl<sub>2</sub>) was dissolved  
20 in 10 ml appropriate ratio of acetone-acetonitrile solution and probe sonicated for 20 minutes (20W, 10 sec.  
21 ON and 2 sec. OFF cycle). The resulting solution was incubated at ambient temperature for few days.

22 Transmission Electron Microscopy (TEM) and High-Resolution TEM (HRTEM) for analyzing the  
23 morphology of nanosheets was done using Philips CM200 (Philips, Netherlands) and JEOL 3010 AEM  
24 (JEOL, Japan) respectively and optical characteristics were observed using UV-Vis absorption  
25 spectroscopy was conducted using Evolution™ 201 (Thermo Fisher, USA) spectroscopy. μ-Raman  
26 spectroscopy and provided insights into structural conformation of the nanoparticles, μ-Raman  
27 spectroscopy was carried by HORIBA HR800 using 633nm laser at 16mW power with 1800 grating. X-  
28 ray diffraction analysis was performed using GIXRD at incident angle 2° for analyzing the structure lattice  
29 of the nanoparticle.

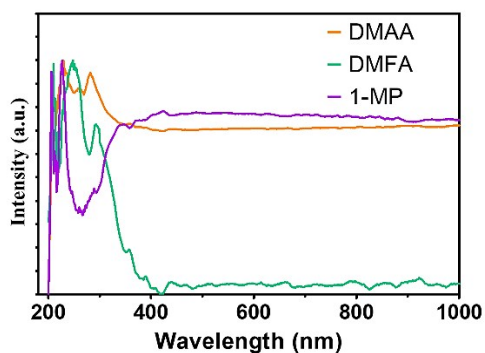
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32 **Scheme S1.** Schematic illustration for synthesis of red fluorescent Stanene oxide (rSt<sub>NS</sub>) nanosheets  
 33 by non-hydrolytic sol-gel method. Initial step comprises of probe sonication and incubation, after  
 34 (day 3) incubation emission of red fluorescence under UV irradiation (lower panel) and lastly (day  
 35 6) green fluorescing Stanene oxide (gSt<sub>NS</sub>).

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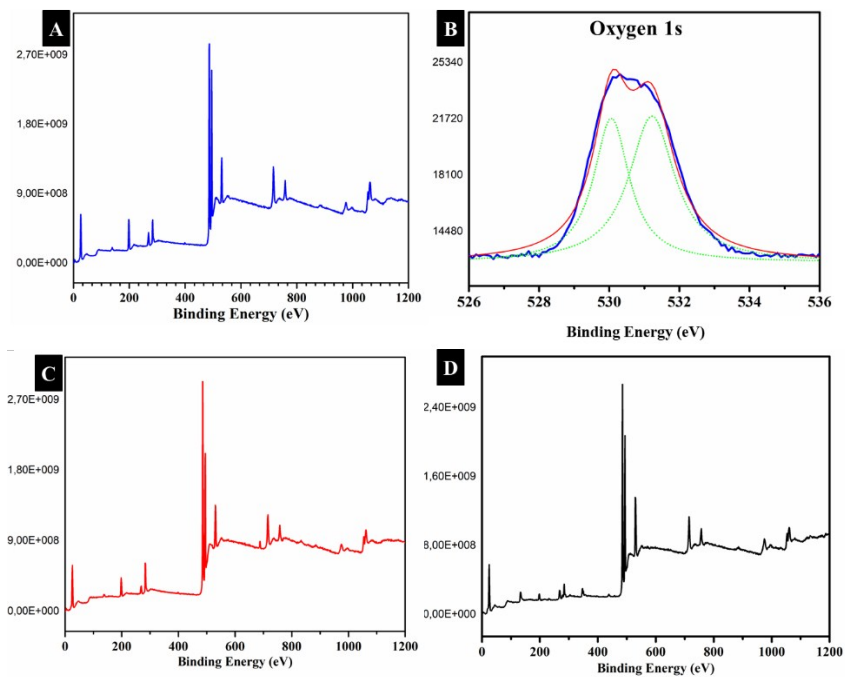
38 **Fig. S1.** Optical (UV-Vis) absorbance of various solvents studied namely DMAA, DMFA and 1-  
 39 Methylparathion for the emergence of red fluorescence.

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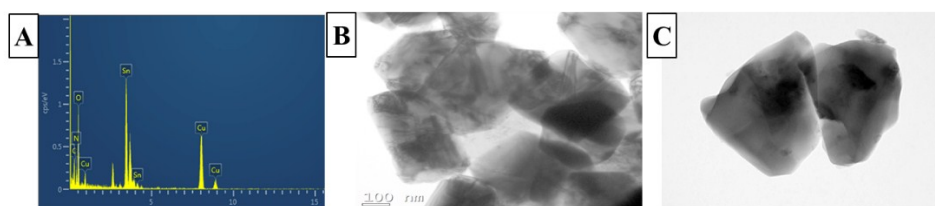


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45 **Fig. S2.** XPS survey scans **A)** full range scan of  $\beta\text{St}_{\text{NS}}$ , **B)** oxygen 1s states ratiometrically equal  
 46 in  $\beta\text{St}_{\text{NS}}$ . **C),D)** full range survey scans of  $\text{rSt}_{\text{NS}}$  and  $\text{gSt}_{\text{NS}}$  respectively.

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50 **Fig. S3.** **A)** EDAX analysis of  $\text{rSt}_{\text{NS}}$ . Showing elements: metal Sn, Oxygen and Nitrogen. **B),C)**  
 51 Hr-TEM images of  $\text{rSt}_{\text{NS}}$  and  $\text{gSt}_{\text{NS}}$  respectively

Element	Line Type	k Factor	k Factor type	Absorption Correction	Wt%	Wt% Sigma	Atomic %
C	K series	2.784	Theoretical	1.00	8.34	0.74	27.15
N	K series	3.534	Theoretical	1.00	2.80	2.31	7.81
O	K series	2.030	Theoretical	1.00	16.90	0.81	41.32
Sn	L series	1.929	Theoretical	1.00	71.97	1.93	23.72
Total:					100.00		100.00

