

UEC Nomination Form

Please complete and return to CLS by December 6, 2021

1. Full Name:

Shuhui Sun

2. Position (Title) or Institution and/or PI (if graduate student):

Professor,
Institut National de la Recherche Scientifique (INRS),
Center for Energy, Materials and Telecommunications, Quebec, Canada

3. Years of Synchrotron Experience at various synchrotron facilities:

Over 12 years of synchrotron experience on various beamlines at the Canadian Light Source (HXMA, SGM, SXRMB, SM, VLS-PGM, MID-IR, REIX, BioXAS).

4. History of CLS Service (Advisory Committees, Beam teams, teacher/mentor at workshops, etc)

- Invited speaker: "CLS Energy Materials Workshop 2019"; also involved in the discussion on the future plan of CLS, October 25-26, 2019,

- Organizer for local workshop, "XAFS Application in Material & Environmental Sciences" (given by CLS beamline scientist), November 18, 2016.

- Organizer for local workshop, "Light up the way to renewable energy" (given by CLS beamline scientist), May 27, 2014.

- I have given lectures at various national and international conferences to introduce our collaboration work with CLS.

5. The CLS has four main scientific areas designated as strategic areas of research. Please indicate which area best aligns with your own research area [Agriculture, Advanced Materials, Health, or the Environment]

Advanced Materials, Environment

6. Brief description of why research at the CLS is critical to your research program (100 words)

My group's research focuses on advanced materials synthesis, characterization and their applications for clean energy conversion/storage and environmental devices, including fuel cells, batteries, H₂ generation and CO₂ reduction. Synchrotron X-ray absorption spectroscopy (XAS) and imaging are the essential tools that enable me to analyze the local electronic structure and environment, and structure evolution of the materials, helping us to further optimize the materials for next-generation low-cost and high-performance energy devices. Beamlines at CLS provide the desirable energy ranges and they are fully equipped with the detection capability for our research projects.

7. Please list a maximum of 3 publications which best represent your synchrotron work at the CLS

[1]. Hongliu Dai, Jing Dong, Mingjie Wu, Qingmin Hu, Dongjiu Wang, Lucia Zuin, Ning Chen, Chao Lai*, Gaixia Zhang*, Shuhui Sun*, "Cobalt Phthalocyanine Derived Molecular Isolation Layer for Highly Stable Lithium Anode". **Angew. Chem. Int. Ed.** 2021, 60, 19852-19859. (IF=15.336)

[2]. Mingjie Wu, Gaixia Zhang*, Ning Chen, Yongfeng Hu, Tom Regier, Diane Rawach, Shuhui Sun*, "Self-reconstruction of Co/Co₂P heterojunction confined in N-doped carbon nanotubes for rechargeable zinc-air flow battery". **ACS Energy Letters**, 2021, 6, 1153-1161 (IF=23.101)

[3]. Zhangsen Chen, Gaixia Zhang, Yuren Wen, Ning Chen, Weifeng Chen, Tom Regier, James Dynes, Yi Zheng, Shuhui Sun*, "Atomically dispersed Fe-Co bimetallic catalysts for the promoted electroreduction of carbon dioxide", **Nano-Micro Letters**, 2021, in press. (IF=16.419)

The CLS reserves the right to limit the number of elected UEC members from non-Canadian institutions to two or fewer. In the event that more than two members from non-Canadian institutions are elected, the lowest vote getter will be replaced by the highest vote getter non-elected nominee from a Canadian institution.