

UEC Nomination Form

Please complete and return to CLS by December 6, 2021

1. Full Name:
Mark R. Daymond
2. Position (Title) or Institution and/or PI (if graduate student):
Professor in Dept. of Mechanical and Materials Engineering, cross-appointed to Dept. of Physics, at Queen's University. Tier 1 Canada Research Chair in Mechanics of Materials. NSERC-UNENE Industrial Research Chair in Nuclear Materials.
3. Years of Synchrotron Experience at various synchrotron facilities:
I have been using synchrotron X-rays since my PhD. My first beam time was in the early days of ESRF in 1995. Since that time, synchrotron experiments have been a significant part of my research, with experiments carried out at ESRF, APS, NSLS, Daresbury, Diamond, and DESY. In addition, I worked as a beamline scientist at the ISIS Pulsed Neutron facility in the UK for 7 years: while neutron facilities are somewhat different, I know what it is like to be working on the facility side. I am a new user at CLS: my research requires high energy X-rays (30-90keV) so until recently I have been conducting my experiments at other facilities. With the Brockhouse beamlines now available I am happy to be able to carry out experiments in Canada. At the APS I am presently a member of a Proposal Review Panel (Scattering-Applied Materials), and previously sat on the APS UO Steering Committee (2012-2014), and on the Beamline Advisory Committee – High Energy Scattering (2009-2014). I have been part of advisory panels and/or review committees for several international neutron facilities.
4. History of CLS Service (Advisory Committees, Beam teams, teacher/mentor at workshops, etc)
I sit on the Ontario Synchrotron Consortium Task Force supporting development of a next generation light source in Canada.
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.
6. Brief description of why research at the CLS is critical to your research program (100 words)
My research looks at how structural materials, particularly metals, deform and fail. I need high energy x-rays as a probe to study internal stresses, dislocation structure evolution, phase transformations as well as the impact of irradiation fields. These

experimental results are critical in validating my models describing material performance.

7. Please list a maximum of 3 publications which best represent your synchrotron work at the CLS
 - a. Measuring strain distributions in amorphous materials, HF Poulsen, HA Wert, J Neufeind, V. Honkimaki, M. Daymond, Nature Materials, v4(1), p33-36 (2005).
 - b. Strain and texture evolution during mechanical loading of a crack tip in martensitic shape-memory NiTi, M.R. Daymond, M.L. Young, J.D. Almer, D.C. Dunand, Acta mater. v55(11), p3929-3942 (2007)
 - c. Study of 3-D stress development in parent and twin pairs of a hexagonal close-packed polycrystal: Part I - in-situ three-dimensional synchrotron X-ray diffraction measurement, H. Abdolvand, M. Majkut, J. Oddershede, J.P. Wright, M.R. Daymond, Acta mater. v93, p246-255 (2015).

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.