

I. PROFESSIONAL PREPARATION

Université de Montréal, Montréal, QC, *Physics*, B.Sc., 1998.

École Polytechnique, Montréal, QC, *Mechanical Engineering*, M.Sc.A., 2001.

École Polytechnique, Montréal, QC, *Mechanical Engineering*, Ph.D., 2005.

II. ACADEMIC/PROFESSIONAL APPOINTMENTS

07/2016 – present **Associate Professor**, *Mechanical Engineering*, University of Kentucky, Lexington, KY.

01/2011 – 06/2016 **Assistant Professor**, *Mechanical Engineering*, University of Kentucky, Lexington, KY.

09/2012 – present **Associate Faculty**, *Center for Computational Science*, University of Kentucky, Lexington, KY.

03/2009 – 05/2009 **Invited Scientist**, *Entry Systems & Technology*, NASA Ames Research Ctr., Moffet Fields, CA.

01/2007 – 12/2010 **Research Associate**, *Aerospace Engineering*, University of Michigan, Ann Arbor, MI.

09/2005 – 12/2006 **Research Associate**, *Mechanical Engineering*, École Polytechnique, Montréal, QC.

III. SELECTED PUBLICATIONS

- [1] Cooper, J. M., Stieha, J. K., Fowler, A. M., Wright, N. A., and Martin, A., "Kentucky Re-entry Universal Payload System," *54th AIAA Aerospace Sciences Meeting*, AIAA Paper 2016-2192, San Diego, CA, January 2016.
- [2] Omidy, A. D., Panerai, F., Lachaud, J. R., Mansour, N. N., and Martin, A., "Effects of water phase change on the material response of low density carbon phenolic ablators," *Journal of Thermophysics and Heat Transfer*, Vol. 30, No. 2, Apr. 2016, pp. 472–477.
- [3] Davuluri, R. S. C., Zhang, H., and Martin, A., "Numerical study of spallation phenomenon in an arc-jet environment," *Journal of Thermophysics and Heat Transfer*, Vol. 30, No. 1, Jan. 2016, pp. 32–41.
- [4] Ferguson, J. C., Panerai, F., Bailey, S. C. C., Lachaud, J. R., Martin, A., and Mansour, N. N., "Modeling the oxidation of low-density carbon fiber material based on micro-tomography," *Carbon*, Vol. 96, Jan. 2016, pp. 57–65.
- [5] Nouri, N. and Martin, A., "Three dimensional radiative heat transfer model for the evaluation of the anisotropic effective conductivity of fibrous materials," *International Journal of Heat and Mass Transfer*, Vol. 83, Apr. 2015, pp. 629–635.
- [6] Weng, H., Bailey, S. C. C., and Martin, A., "Numerical study of iso-Q sample geometric effects on charring ablative materials," *International Journal of Heat and Mass Transfer*, Vol. 80, Jan. 2015, pp. 570–596.
- [7] Weng, H. and Martin, A., "Multidimensional modeling of pyrolysis gas transport inside charring ablative materials," *Journal of Thermophysics and Heat Transfer*, Vol. 28, No. 4, Oct.–Dec. 2014, pp. 583–597.
- [8] Martin, A. and Boyd, I. D., "Non-Darcian behavior of pyrolysis gas in a thermal protection system," *Journal of Thermophysics and Heat Transfer*, Vol. 24, No. 1, Jan.–Mar. 2010, pp. 60–68.
- [9] Martin, A., Cozmuta, I., Boyd, I. D., and Wright, M. J., "Kinetic rates for gas phase chemistry of phenolic based carbon ablator decomposition in atmospheric air," *Journal of Thermophysics and Heat Transfer*, Vol. 29, No. 2, Apr. 2015, pp. 222–240.

IV. SYNERGISTIC ACTIVITIES

AWARDS

- College of Engineering Dean's Award for Excellence in Research – Category Junior Faculty, 2016
- Best teacher award – Category lecturer, École Polytechnique, Montréal, QC, 2003, 2005
- AIAA Award for Best Paper in Thermophysics, 2011

ABLATION WORKSHOP (2011-2015)

- Technical workshop that englobes NASA, Air Force, Sandia National Lab., and academic institutions. In charge of the code validation activity. Chair of the organizing committee of the 5th, 6th and 7th Ablation Workshop.

PROFESSIONAL MEMBERSHIP

- Professional Engineer (Kentucky)
- Kentucky Academy of Science
- AIAA Associate Fellow
- AIAA Thermophysics Technical Committee

V. SCIENTIFIC AND MANAGEMENT EXPERIENCE

Dr. Alexandre Martin has worked in the field of fluid-solid interactions for the last 14 years. He has contributed to various scientific fields ranging from hypersonic aerothermodynamics, plasma physics, numerical algorithmic and mining ventilation. He is especially interested in ablation, the removal of solid material from a surface by thermal processes. Over the years of his scientific career, he has developed and supervised computational fluid dynamics and heat transfer codes that were able to model various types of ablation. During his graduate studies, his work focused on the ablation caused by the radiation from an electric arc. He now focuses his work on ablation of the heat-shields of atmosphere re-entry vehicles, mostly as part of a NASA funded projects. He is an active participant in the aerothermodynamics and ablation community: he was also the Technical Chair of the last two *Ablation Workshops*, and has been a member of the scientific committee that produces the *Ablation Test-Cases* every year. Since at the University of Kentucky, he has secured funding for ablation research that amounts to approximately \$3 million, mostly as PI. These include multi-university efforts, and collaboration with industry. Over the course of his academic career, he has supervised more than 40 students at various levels. His university research laboratory, the *Gas Surface Interaction Lab* currently hosts 1 postdoctoral scholar, 7 PhD students, 3 Masters students, and many undergraduate students. Dr. Martin has published more than 25 peer-reviewed archival journal article and 45 conference papers, and is regularly invited to give presentations on ablation.

V. COLLABORATORS & OTHER AFFILIATIONS

(a) Collaborators:

- Nagi Mansour, NASA Ames
- Michael J. Wright, NASA Ames
- Adam Amar, NASA Johnson
- Tom van Eekelen, LMS Samtech
- Ranja Metha, CFDRC
- Jochen Marschal, SRI Int.
- Jason White, SRI Int.
- Scott Splinter, NASA Langley
- Ioana Cozmuta, NASA Ames
- Paul Danehy, NASA Langley
- David Hash, NASA Ames
- Jean Lachaud, UC Santa-Cruz
- Francesco Panerai, NASA Ames.
- Thierry Magin, VKI
- Marco Panesi, UIUC
- Chi Shen, Kentucky State U.

(b) Graduate and Postdoctoral Advisors

- Jean-Yves Trépanier, École Polytechnique, Montréal, QC (Graduate advisor)
- Marcelo Reggio, École Polytechnique, Montréal, QC (Graduate advisor)
- Philippe Robin-Jouan, Areva T&D, Lyon, France (Postdoctoral sponsor)
- Iain D. Boyd, The University of Michigan, Ann Arbor, MI (Postdoctoral advisor)