

LIST OF PUBLICATIONS

A. PAPERS PUBLISHED IN PEER-REVIEW JOURNALS

10. **C. Dumitrache**, A. Gallant, N. Oliveira, C. O. Laux and G. D. Stancu, "Quantitative fs-TALIF in high-pressure NRP discharges: calibration using VUV absorption spectroscopy," *Plasma Sources Sci. Technol.* **31**(1), 015004 (2022).
9. **C. Dumitrache**, C. Butte, A. Yalin, "Resonant dual-pulse laser ignition technique based on oxygen REMPI pre-ionization," *Scientific Reports* **10**, 19916 (2020).
8. **C. Dumitrache** and A. Yalin, "Gas dynamic regimes observed in dual-pulse laser ignition," *Int. J. Heat Mass Transf.* **161**, 120302 (2020).
7. **C. Dumitrache** and A. Yalin, "Gas dynamics and vorticity generation in laser-induced breakdown of air," *Opt. Express* **28**(4), 5835-5850 (2020).
6. **C. Dumitrache**, A. Gallant, N. Minesi, S. Stepanyan, G. Stancu, C. Laux, "Hydrodynamic regimes induced by nanosecond pulsed discharges in air: mechanism of vorticity generation," *Journal of Appl. Phys. D.* **52**(36), art. 364001 (2019).
5. **C. Dumitrache**, R. VanOsdol, C. Limbach, A. Yalin, "Control of Early Flame Kernel Growth by Multi-Wavelength Laser Pulses for Enhanced Ignition," *Scientific Reports* **7**(1), art. 10239 (2017).
4. **C. Dumitrache**, M. Baumgardner, A. Boissiere, A. Maria, J. Roucis, A. Marchese, A. Yalin "A study of laser induced ignition of methane-air mixtures inside a Rapid Compression Machine," *Proc. Combust. Inst.* **36**(3), 3431-3439 (2017).
3. **C. Dumitrache**, C. Limbach, A. Yalin, "Threshold Characteristics of Ultraviolet and Near Infrared Nanosecond Laser Induced Plasmas," *Phys. Plasmas* (1994-present) **23**(9), art. 093515 (2016).
2. A. Yalin, N. Wilvert, **C. Dumitrache**, S. Joshi, M. Shneider, "Laser Plasma Formation Assisted by Ultraviolet Pre-ionization," *Phys. Plasma* **21**(10), art. 103511 (2014).
1. **C. Dumitrache**, J. Rath, A. Yalin, "High Power Spark Delivery System Using Hollow Core Kagome Lattice Fibers," *Materials* **7**(8), 5700-5710 (2014).

B. PROCEEDINGS OF INTERNATIONAL CONFERENCES

(Presentations at International Meetings published in extended version)

20. **C. Dumitrache**, G. Croitoru, N. Pavel, "Laser ignition of CH₄-air mixtures by a four-beam passively Q-switched Nd:YAG/Cr⁴⁺:YAG laser operating in burst mode," The 9th Tiny Integrated Laser and Laser Ignition Conference 2022, 19-21 April 2023, Pacifico Yokohama, Yokohama, Japan, presentation TILA-LIC2-02 (oral presentation).
19. N. T. Vasile, G. Croitoru, **C. Dumitrache**, and N. Pavel, "Multi-point, pulse-train laser ignition of methane-air mixtures by a high-peak power passively Q-switched Nd:YAG/Cr⁴⁺:YAG compact laser," 10th EPS-QEOD EUROPHOTON Conference, 28 Aug. - 2 Sept. 2022, Hannover, Germany; presentation TUE-P-1.1. EPJ Web Conf. **267**, 01002 (2022), <https://doi.org/10.1051/epjconf/202226701002>
18. **C. Dumitrache**, A. Gallant, G. Stancu, and C. Laux, "Ground-State Atomic Nitrogen Measurements using fs-TALIF in High-Pressure NRP Discharges," 58th AIAA Aerospace Sciences Meeting, 6-10 January 2020, Orlando, FL, USA; AIAA 2020-1745.
17. C. Butte, P. Lokini, **C. Dumitrache**, and A. Yalin, "Single and Dual-Pulse Laser Ignition of Methane-Air and Hydrogen-Air Mixtures," 58th AIAA Aerospace Sciences Meeting, 6-10 January 2020, Orlando, FL, USA; AIAA 2020-1893.
16. C. Butte, **C. Dumitrache**, and A. Yalin, "Dual-Pulse Laser Ignition Using Oxygen REMPI Preionization," 50th AIAA Plasmadynamics and Lasers Conference, 17-21 June 2019, Dallas, TX, USA; AIAA 2019-3117.
15. **C. Dumitrache**, A. Gallant, G. Stancu, and C. Laux, "Measurements of ground state atomic nitrogen in high-pressure NRP discharges using fs-TALIF," 24th International Symposium on Plasma Chemistry, Naples, Italy, June 9-14, 2019.
14. A. Gallant, **C. Dumitrache**, G. Stancu, and C. Laux, "Long-lived emission in the afterglow of Nitrogen NRP discharges: a tool for hydrodynamics and kinetics studies," 24th International Symposium on Plasma Chemistry, Naples, Italy, June 9-14, 2019.
13. **C. Dumitrache**, A. Gallant, G. Stancu, and C. Laux, "Femtosecond Two-Photon Absorption Laser Induced Fluorescence (fs-TALIF) Imaging of Atomic Nitrogen in Nanosecond Repetitive Discharges," 57th AIAA Aerospace Sciences Meeting, 7-11 January 2019, San Diego, CA, USA; AIAA 2019-1507.
12. C. Butte, **C. Dumitrache**, and A. Yalin, "Properties of dual-pulse laser plasmas and ignition characteristics in propane-air and methane-air mixtures," 57th AIAA Aerospace Sciences Meeting, 7-11 January 2019, San Diego, CA, USA; AIAA 2019-0464.
11. **C. Dumitrache**, C. Butte, A. Eickelberg, and A. Yalin, "On the Use of REMPI Pre-Ionization for Laser Plasma Formation," 56th AIAA Aerospace Sciences Meeting, Kissimmee, 8-12 January 2018, Kissimmee, FL, USA; AIAA 2018-1431.
10. **C. Dumitrache** and A. Yalin, "Numerical Modeling of the Hydrodynamics Induced by Dual-Pulse Plasma," 56th AIAA Aerospace Sciences Meeting, 8-12 January 2018, Kissimmee, FL, USA; AIAA 2018-0689
9. **C. Dumitrache**, R. VanOsdol, C. Limbach, and A. Yalin, "Laser Ignition of Propane-Air Mixtures Using a Dual-Pulse Technique," 55th AIAA Aerospace Sciences Meeting, Grapevine, 9-13 January 2017, Grapevine, TX, USA; AIAA 2017-1976.
8. C. Limbach, **C. Dumitrache**, and A. Yalin, "Laser Light Scattering from Equilibrium, High Temperature Gases: Limitations on Rayleigh Scattering Thermometry," 47th AIAA Plasmadynamics and Lasers Conference, 13-16 June 2016, Washington, D.C., USA; AIAA 2016-3381.
7. **C. Dumitrache**, C. Limbach, and A. Yalin, "Laser Thermal Ignition Using a Dual-Pulse Approach," 54th AIAA Aerospace Sciences Meeting, 4-8 January 2016, San Diego, CA, USA; AIAA 2016-0460.

6. **C. Dumitrache**, C. Rose, and A. Yalin, "Towards Laser Ignition by Rapid Heating of Water Vapor," 46th AIAA Plasmadynamics and Lasers Conference, 22-26 June 2015, Dallas, TX, USA; AIAA 2015-2660.
5. **C. Dumitrache** and A. Yalin, "Laser-Induced Heating Using a Non-Resonant Dual-Pulse Approach with Application to Laser Ignition," 46th AIAA Plasmadynamics and Lasers Conference, 22-26 June 2015, Dallas, TX, USA; AIAA 2015-2658.
4. **C. Dumitrache**, M. Baumgardner, A. Boissiere, A. Marchese, A. Maria, and J. Roucis, "Laser Ignition of Methane-Air Mixtures with a Rapid Compression Machine," 53rd AIAA Aerospace Sciences Meeting, 5-9 January 2015, Kissimmee, FL, USA; AIAA 2015-1831.
3. **C. Dumitrache**, A. Yalin, and M. Shneider, "Laser Generated Plasma Using a Dual Pulse Approach with Application to Laser Ignition," 45th AIAA Plasmadynamics and Lasers Conference, 16-20 June 2014, Atlanta, GA, USA; AIAA 2014-2071.
2. **C. Dumitrache**, J. Rath, A. Yalin, and Gupta, "Development of a Photonic Crystal Fiber Delivery System for Laser Ignition in Engines," 45th AIAA Plasmadynamics and Lasers Conference, 16-20 June 2014, Atlanta, GA, USA; AIAA 2014-2074
1. **C. Dumitrache**, N. Wilvert, M. Shneider, and A. Yalin, "Laser Plasma Formation Using Dual Pulse Pre-ionization," 44th AIAA Plasmadynamics and Lasers Conference, 24-27 June 2013, San Diego, CA, USA; AIAA 2013-2636.

C. COMMUNICATIONS AT INTERNATIONAL CONFERENCES

(Technical Digests, manuscripts up to 3 pages)

7. **C. Dumitrache**, A.P. Yalin, "Vorticity dynamics in laser-induced plasma," 19th International Conference on Plasma Physics and Applications, CPPA 2021, Aug. 31 - Sept. 3, Magurele, Bucharest, Romania; presentation O-11 (oral presentation).
6. C.I. Constantin, **C. Dumitrache**, B. Mitu, "Characterization of a filamentary argon plasma jet by optical emission spectroscopy," 19th International Conference on Plasma Physics and Applications, CPPA 2021, Aug. 31 - Sept. 3, Magurele, Bucharest, Romania; presentation P2-02 (poster presentation).
5. **C. Dumitrache**, A. Gallant, G. Stancu, and C. Laux, "Study of Hydrodynamic effects induced by Nanosecond Repetitively Pulsed (NRP) Discharges," XXXIV ICPIG & ICRP-10, July 14-19, 2019, Sapporo, Hokkaido, Japan.
4. **C. Dumitrache**, C. M. Limbach, and A. P. Yalin, "A Study of Flame Dynamics Induced by A Dual-Pulse Laser Ignition Technique," 2017 IEEE International Conference on Plasma Science (ICOPS), 21-25 May 2017, Atlantic City, NJ, USA; 2017, pp. 1-1.
3. C. M. Limbach, **C. Dumitrache**, and A. P. Yalin, "Shock Wave Generation by Ultraviolet Nanosecond Laser Pulses at Reduced Pressure," 2017 IEEE International Conference on Plasma Science (ICOPS), 21-25 May 2017, Atlantic City, NJ, USA; 2017, pp. 1-1.
2. **C. Dumitrache**, C. M. Limbach, and A. P. Yalin, "Properties of ultraviolet and near-infrared laser induced air plasmas and their application for spark ignition," 2016 IEEE International Conference on Plasma Science (ICOPS), 19-23 June 2016, Banff, AB, Canada; 2016, pp. 1-1.
1. **C. Dumitrache**, A. Boissiere, M. E. Baumgardner, A. J. Marchese, A. P. Yalin, A. Maria, and J. Roucis, "Laser Ignition of Methane-Air Mixtures: An investigation of the Lean Limit and Minimum Ignition Energy," in Laser Ignition Conference, OSA Technical Digest (online) (Optical Society of America, 2015), paper W3A.4.

D. PATENTS

1. Y. S. Simpson, O. Johns, C. E. Rose, A. Yalin, **C. Dumitrache**, "Photonic-crystal-fiber-delivered laser-triggered high-voltage gas switch," United States Patent US 10687412 B1 (June 16, 2020).