
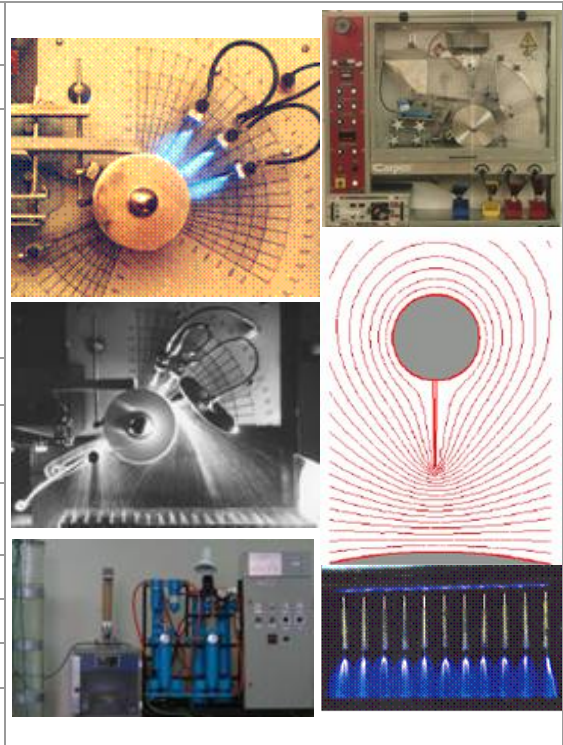


## HIGH INTENSITY ELECTRIC FIELDS LABORATORY

### Contact details

|                    |   |
|--------------------|---|
| Name               | <b>High Intensity Electric Fields Laboratory</b>  |
| Acronym            | <b>LCEI</b>   |
| Logo               |                    |
| Site               | <a href="http://users.utcluj.ro/~lcei/index_ro.html">http://users.utcluj.ro/~lcei/index_ro.html</a> |
| Address            | Headquarters: 26-28 G. Baritiu St., room 365<br>Research lab.: 103-105 Bd Muncii, room C201         |
| Faculty Department | <b>Faculty of Electrical Engineering<br/>Electrotechnics and Measurements Department</b>            |
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### Areas of expertise

**Equipment and technologies for electrostatic separation**  
**Modelling of electrostatic processes**  
**Ozonizing technologies for liquids**  
**Biological effects of high intensity electric fields.**  
**Consulting and technology transfer in these fields**

### Team

**Prof. Adrian Samuila**, Prof. Roman Morar, Prof. Alexandru Iuga, Prof. Lucien Dascalescu (Univ. Poitiers), Prof. Vasile Neamtu, Assoc. Prof. Ilie Suarasan, Assist. Prof. Sorin Budu, dr. Laur Calin, dr. Mihai Bilici, ing. Andrei Catinean.

### Representative projects

**“Program for promoting of electroseparation and ozonizing modern electrostatic technologies, training of human resources for research and infrastructure consolidation of the High-Intensity Electric Fields Laboratory”**, Major Grant, World Banc, Romanian Government, (2000-2002)  
**“Experimental researches on ozone influence in rehabilitation of wastewater from public sewerage networks”**, Grant CNCSIS, (2001-2003)  
**“Researches on developing electrostatic separation technology of muscovite”**, Grant CNCSIS, (2005-2006)  
**“Optimization of innovative methods of electrostatic separation applied in the industry of recycling materials”**, (2005-2006)  
**“Quality Improvement of quartz sands by electrostatic separation in high intensity electric field”**, Grant CNCSIS, (2005-2007)  
**“Fluidized bed tribocharging of multi-component mixtures of recyclable plastic materials”**, Grant CNCSIS, (2005-2007)  
**“Recovery technologies of metals and plastics from wastes of informatics and telecommunications equipment”**, Proiect CEEX, (2005-2007)  
**“Electrostatic procedures for the recovery of copper a”nd plastic materials from micronized waste”** Proiect BRANCUSI 88 BM (2017-2018)  
**“Optimized technologies with reduced impact on the environment for the advanced recovery of waste materials IT equipment”** Proiect 84PCCDI - 01/03/2018 TRADE-IT (2018 – 2020)

### Significant results

### The most representative publications of the past 5 years:

1. Catinean A, Dascalescu L, Lungu M, Dumitran L, Samuila A. *Improving the recovery of copper from electric cable waste derived from automotive industry by corona-electrostatic separation*. *Particulate Science and Technology*, vol. 39. Issue 4, 2021 DOI: [10.1080/02726351.2020.1756545](https://doi.org/10.1080/02726351.2020.1756545) ISSN:0272-6351.
2. L. Calin, A. Catinean, M. Bilici, A. Samuila, L. Dascalescu. *Electrostatic separation of plastic mixture ABS/HIPS and ABS-PC/HIPS from IT equipment using fluidized bed*. *Particulate Science and Technology*, Published online 13 May 2021, <http://doi.org/10.1080/02726351.2021.1922560> ISSN: 0272-6351.
3. L. Calin, A. Catinean, M. Bilici, A. Samuila. *A corona-electrostatic technology for zinc and brass recovery from the coarse fraction of the recycling process of spent alkaline and zinc-carbon batteries*. *Journal of Cleaner Production*, Volume 278, 1 January 2021, 123477. ISSN 0959/6526.
4. M. Bilici, A. Catinean, L. Călin, A. Samuila. *The Effect of Charged Granules Agglomerations on the Electric Field Distribution of a Tribo-aero-electrostatic Separator*. 11th International Symposium on Advanced Topics in Electrical Engineering (ATEE). Bucharest, Romania, 2019, pp. 1-6, DOI: [10.1109/ATEE.2019.8724939](https://doi.org/10.1109/ATEE.2019.8724939)
5. Adrian Samuila, Lucian Dascalescu, Laur Calin, Mihai Bilici, Andrei Catinean. *Recent Researches in Electrostatic Separation Technologies for the Recycling of Waste Electric and Electronic Equipment*. TIM 19 Physics Conference, 29-31 May, Timisoara, Romania, pp. 1-10. Published in AIP Conference Proceedings, Vol. 2218. American Institute of Physics Inc. <https://doi.org/10.1063/5.0001074>
6. L. Calin, M. Bilici, A. Samuila. *Improvement of the Fluidized Bed Tribocharging Device for Electrostatic Separation of Plastics from Electronic Medical Waste*. 6th International Conference on Advancements of Medicine and Health Care through Technology; 17–20 October 2018, Cluj-Napoca, Romania. IFMBE Proceedings, volume 71, pp 341-346.
7. Iuga, A., Samuila, A., Morar, R., Bilici, M., Dascalescu, L. *Tribocharging techniques for the electrostatic separation of granular plastics from waste electric and electronic equipment*. *Particulate Science and Technology*, Volume 34 (1), 2016, pp. 45-54. ISSN:0272-6351.
8. Buda, G., Samuila, A., Bilici, M., Atroune, S., Dascalescu, L. *Set Point Identification and Robustness Testing of a Triboelectrostatic Separation Process*. *IEEE Transactions on Industry Application*, Vol. 51(2), 2015, pp. 1153-1160.
9. Adrian Samuila, Mihai Bilici, Lucian Dascalescu: *Recycling of PS/PVC Granular Waste Using a Fluidized-Bed Two-Insulated-Rolls-Type Tribo-Aero-Electrostatic Separator*. The 9<sup>th</sup> International Symposium on Advanced Topics in Electrical Engineering, Bucarest, 2015, pp. 254-259
10. G. Buda, A. Samuila, S. Atroune, M. Bilici, L. Dascalescu, "Set point identification of a tribocharging process for mixed granular solids", in *Journal of electrostatics*, vol.7, no. 3, 2013, pp. 407-412
11. Al Hajjar Nadim, Pitu Flaviu, Nicodim FiŃ, Pitu Florina, Popa Calin, Suarăsan Ilie, Eموke Pall. *Effect of aqueous ozone solution on pancreatic cells*. *Journal of Cell and Animal Biology* Vol. 6(2), pp. 25-28, 30 January, 2012.
12. Al Hajjar Nadim, Flaviu Pitu, Eموke Pall, Florina Pitu, Ilie Suarasan, Calin Popa and Nicodim FiŃa. *In vitro effect of ozonated saline on microorganisms involved in pancreatic and peripancreatic necrosis infection in severe acute pancreatitis*. *African Journal of Microbiology Research* Vol. 6(3), pp. 611-616, 23 January, 2012
13. A. Iuga, A. Samuila, V. Neamtu, R. Morar, R. Beleca, S. Das, L. Dascalescu, "Removal of Metallic Particles from Acrylonitrile Butadiene Styrene Wastes Using Electrostatic Separation Methods", in *IEEE Transactions on Industry Application*, vol. 47, no. 1, 2011, pp. 322-330
14. L. Dascalescu, M. Bilici, C. Dragan, A. Samuila, Y. Ramdani, A. Tilmatine, „Robust Design and Capability Evaluation of a Tribo-aerodynamic Charging Process for Fine Particle” in *IEEE Transactions on Industry Application*, vol. 47, no. 3, 2011, pp. 1086-1092

### The offer addressed to the economic environment

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|------------------------|--|
| Research & development | HIEFL is equipped with installations for electrostatic separations of granular materials, unique on a national scale and competitive on an international scale: ELSEP and ILES-1 roll carrier corona-electrostatic separators, SEP-1 plate type electrostatic separator, ILES-2 and TESS free fall separators, insulated rolls tribo-aero-electrostatic separator, free-fall corona electrostatic separator, ELSMOD roll carrier pilot separator. The list of the research equipment of HIEFL includes: regulated high-voltage supplies (0-100)kV, electromagnetic vibratory feeders for granular materials, tribocharging devices, experimental installation for liquids treatment (5 grams ozone/hour), Keithley digital electrometer, (30-100)kV resistive dividers, electrostatic kilo-voltmeter, laboratory ozone-meter, RETSCH SM300 cutting mill, TestPoint software, Modde -user-friendly software for the design of experiments, Superficial Charge Simulation Program. |
| Consulting & Training  | Fundamental and applied research by projects, grants, programs in the domains: equipment and technologies for electrostatic separation, modelling of electrostatic processes, ozonizing technologies for liquids, biological effects of electric fields.<br>Master and Doctoral studies in Electrostatics.<br>Research and Development of experimental devices and industrial equipment using high-intensity electric fields.<br>Promotion of new technologies in high intensity electric fields and orientation of research to medium and long term needs of the society.<br>Scientific cooperation & integration in European Research Area.<br>Quality in university education and scientific research.  |

Last updated: September 2021