

PERSONAL INFORMATION **Emil-Alexandru Brujan**



📍 Department of Hydraulics, University Politehnica of Bucharest, Spl. Independentei 313, 060042 Bucharest, Romania

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Sex Male | Date of birth 17/04/1964 | Nationality Romanian

WORK EXPERIENCE

- 2014 - **Professor, Department of Hydraulics, University Politehnica of Bucharest, Romania**
 - main activities: Education and research
- 2005 - 2014 Associate Professor, Department of Hydraulics, University Politehnica of Bucharest, Romania
 - main activities: Education and research
- 2000 - 2005 Assistant Professor, Department of Hydraulics, University Politehnica of Bucharest, Romania
 - main activities: Education and research
- 1990 - 2000 Researcher, Department of Hydraulics, University Politehnica of Bucharest, Romania
 - main activities: Research

EDUCATION AND TRAINING

- 1998 - 1999 Post-doctorial fellow, Medizinisches Lazer Centrum Lübeck, Germany (Mentor: Prof. Dr. rer. nat. Alfred Vogel)
 - Cavitation, Shock waves, Laser-tissue interaction
- 1994 - 1997 PhD degree in Fluid Mechanics, University Politehnica Timisoara, Romania
 - Cavitation, Fluid mechanics, Non-Newtonian fluid mechanics, Shock waves, Biological effects of cavitation
- 1984 - 1989 BSc degree in Mechanical Engineering, University Politehnica Bucharest, Romania
 - Hydraulic machinery, Fluid mechanics, Cavitation

PERSONAL SKILLS

Mother tongue(s) Romanian

Other language(s)	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C1	C1	C1	C1	C1
French	B1	B1	B2	B2	B2

Levels: A1/A2: Basic user - B1/B2: Independent user - C1/C2 Proficient user

Communication skills

- gained experience in communicating with people at all levels in organizations while completing my research stages in universities and research institutes from Germany, USA, UK, and Japan,
- confident, articulate, and professional speaking abilities,
- excellent presentation and negotiations skills;

Organisational / managerial skills

- principal investigator for 7 research grants from the Romanian agencies and 5 international grants from the *Volkswagen Foundation* (Germany), *Japan Society for the Promotion of Science* (Japan), *The Royal Society* (UK), and *Engineering and Physical Sciences Research Council* (UK),
- ability to initiate and manage cross-functional teams and multi-disciplinary projects,
- critical thinking, problem solving skills, ability to achieve the target within given time;

Job-related skills

Cavitation (including optic cavitation, acoustic cavitation, and biological and medical effects of cavitation), Numerical simulations, Fluid mechanics (theoretical and experimental), Non-Newtonian fluid mechanics, Acoustics, Biological fluids, Shock waves, Laser-tissue interaction, High-speed photography;

Digital competence

SELF-ASSESSMENT				
Information processing	Communication	Content creation	Safety	Problem solving
Proficient user	Proficient user	Proficient user	Proficient user	Proficient user

ADDITIONAL INFORMATION

- Publications
- Presentations
- Projects
- Conferences
- Seminars
- Honours and awards
- Memberships
- References
- Citations
- Courses
- Certifications

- 1 book published with Springer and 63 articles published in *Journal of Fluid Mechanics*, *Soft Matter*, *Physics of Fluids*, *Ultrasound in Medicine and Biology*, *Physics in Medicine and Biology*, *Ultrasonics Sonochemistry*, *Experimental Thermal and Fluid Science*, etc.;
- More than 2100 citations (excluding self-citations) in Web of Science and more than 2300 citations (excluding self-citations) in Scopus. Papers cited in *Nature*, *Reviews of Modern Physics*, *Chemical Reviews*, *Advanced Materials*, *Reports on Progress in Physics*, *Proceedings of the National Academy of Sciences USA*, *Journal of the American College of Cardiology*, *European Heart Journal*, *Advanced Drug Delivery Reviews*, *Physical Review Letters*, *Annual Review of Fluid Mechanics*, *TRAC-Trends in Analytical Chemistry*, *Science Advances*, *Advanced Functional Materials*, etc.;
- Hirsch index: **23** (*Web of Science*), **24** (*Scopus*), **26** (*Google Scholar*), **26** (*ResearchGate*);
- Included in World’s Top 2% Most Cited Scientists (Stanford-Elsevier Ranking) in 2019, 2020, 2021, and 2022;

Key publications:

- E.A. Brujan, K. Nahen, P. Schmidt, A. Vogel – Dynamics of laser-induced cavitation bubbles near an elastic boundary. *Journal of Fluid Mechanics* **433**(2001), 251-281,
- E.A. Brujan, K. Nahen, P. Schmidt, A. Vogel – Dynamics of laser-induced cavitation bubbles near elastic boundaries: : Influence of the elastic modulus. *Journal of Fluid Mechanics* **433**(2001), 283-314,
- E.A. Brujan, G.S. Keen, A. Vogel, J.R. Blake – The final stage of the collapse of a cavitation bubble close to a rigid boundary. *Physics of Fluids* **14**(2002), 85-92,
- E.A. Brujan – The role of cavitation microjets in the therapeutic applications of ultrasound. *Ultrasound in Medicine and Biology* **30**(2004), 381-387,
- E.A. Brujan, A. Vogel – Stress wave emission and cavitation bubble dynamics by nanosecond optical breakdown in a tissue phantom. *Journal of Fluid Mechanics* **558**(2006), 281-308,
- E.A. Brujan, T. Ikeda, Y. Matsumoto – On the pressure of cavitation bubbles. *Experimental Thermal and Fluid Science* **32**(2008), 1188-1191,
- E.A. Brujan – *Cavitation in non-Newtonian Fluids*. Springer, Heidelberg, 2011,
- E.A. Brujan, T. Noda, A. Ishigami, T. Ogasawara, H. Takahira – Dynamics of laser-induced cavitation bubbles near two perpendicular rigid walls. *Journal of Fluid Mechanics* **841**(2018), 28-49,
- E.A. Brujan, A.M. Zhang, Y.L. Liu, T. Ogasawara, H. Takahira – Jetting and migration of a laser-induced cavitation bubble in a rectangular channel. *Journal of Fluid Mechanics* **948**(2022), A6;
- *Henri Coanda Award* of the Romanian Academy (2001);

- *Japan Society for the Promotion of Science Invited Fellow* at the University of Tokyo (2002, 2005, 2007) and Osaka Metropolitan University (2012);
- *The Royal Society Research Fellow* at the Department of Mechanical Engineering, University of Swansea (2005);
- *Fulbright Scholar* at the Department of Physics and Astronomy, University of California Los Angeles (UCLA) (2004);
- *Engineering and Physical Sciences Research Fellow* at the School of Mathematics, University of Birmingham (2001);
- *Volkswagen Research Fellow* at the Medical Laser Centre Lübeck (1998-1999);
- *International Collaboration*: Professor Alfred Vogel (University of Lübeck, Germany), Professor Yoichiro Matsumoto (University of Tokyo, Japan), Professor John Blake (University of Birmingham, UK), Professor Gary A. Williams (University of California, USA), Professor Hiroyuki Takahira (Osaka Metropolitan University, Japan), Professor A-Man Zhang (Harbin Engineering University, China), Professor Werner Lauterborn (University of Gottingen, Germany), Professor Claus-Dieter Ohl (Otto-von-Guericke University Magdeburg, Germany);
- *Referee* for more than 370 manuscripts submitted to *Journal of Fluid Mechanics*, *Circulation*, *Physical Review Letters*, *Communications Physics*, *Physical Review Fluids*, *Ultrasonics Sonochemistry*, *Ultrasound in Medicine and Biology*, *Physics of Fluids*, *International Journal of Multiphase Flow*, *Journal of Biomedical Optics*, etc.;
- *Grant evaluator* for European Commission, European Innovation Council, Japan Society for the Promotion of Science (JSPS), Engineering and Physical Sciences Research Council (EPSRC), ETH Zürich Research Commission, Fulbright Commission (Fulbright Senior Competition), Arab Science and Technology Foundation (ASTF), and Romanian Agency for Scientific Research (ANCS);
- *Invited lectures* at the University of Tokyo (Japan), Tokyo Noko University (Japan), University California Los Angeles (USA), University of California Santa Barbara (USA), Karlsruhe Institute of Technology (Germany), Institut für Strömungsmechanik und Wärmeübertragung - TU Wien (Austria), Politecnico di Milano (Italy), Osaka Metropolitan University (Japan), University of Hong Kong, University of Birmingham (United Kingdom), Osaka University (Japan), Kanazawa Institute of Technology (Japan);
- *Associate Editor* for *Frontiers in Mechanical Engineering* (eISSN 2297-3079);
- *Member* of Gesellschaft für Angewandte Mathematik und Mechanik (GAMM), European Mechanics Society (EUROMECH), SigmaXi (founding member of SigmaXi Romania);
- *Vice-President* of the National Research Council of Romania (2011).