R&D Engineer and Developer (De/Fr/En)

Dr. Boris **Legradic**

About Me

Own transport
Switzerland
Married, two children

Address

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Education

PhD in Science
Plasma Physics
EPFL, Lausanne, 2007–2011

Master's Degree
Technical Physics
TU Wien, Austria, 1999–2006

Languages

Language	
German	native
English	● ● ● ● ○
French	● ● ● ● ○
Italian	● ● ○ ○ ○

Interests

Home Automation: Home Assistant
Technology: Open Source, Space, Robotics
Reading: Science Fiction, Science
Martial Arts: Vo Vietnam, Qi Gong
Climbing
Running: Marathon

SUMMARY

Versatile Full-Stack Developer and R&D Engineer with over a decade of experience in industrial innovation and solar technologies. Holding a PhD in plasma physics (EPFL), I bring a sharp analytical mindset to solving complex, real-world challenges. My recent transition into full-stack development led to the successful creation and deployment of a powerful data management and analytics platform. Passionate about sustainability, open technologies, and continuous learning, I thrive in collaborative, cross-disciplinary environments where I can turn ambitious ideas into robust, scalable solutions.

PROFESSIONAL SKILLS

Backend	Python, Django, C++, REST APIs
Frontend	HTML, CSS, JavaScript, Plotly, Dash
DevOps & Automation	Git, Docker, Home Assistant, ESPHome, PowerShell
Databases	PostgreSQL, MySQL
Data Analysis	Pandas, NumPy, SciPy, Statistica, MATLAB
AI & ML	PyTorch, YOLO, LLM integration
Electronics	ESP32, Arduino, Raspberry Pi
Mechanical Design & Prototyping	Autodesk Fusion 360, 3D printing
Project Management	Prototype coordination, technical co-leadership

WORK ENVIRONMENT

Independent Development	From design to deployment
Operating Systems	Linux (Ubuntu), Windows, macOS
Collaborative Tools	Slack, Teams, technical and scientific documentation
Multidisciplinary Teams	R&D, electronics, and software
Multilingual Environment	Daily work in French, English, and German
Project Modes	Solo or collaborative, onsite and remote

PROFESSIONAL EXPERIENCE

09.2024

Consultant
INDEPENDENT PROJECT · Fiez ○
Integration of a photovoltaic system and a thermodynamic water heater with Home Assistant via ESP32. Increased self-consumption by 20%.

01.2017 - 03.2025

Senior Development Engineer
MEYER BURGER RESEARCH · Hauterive ○
Development and deployment of a data management and analytics platform. 3× more data, 50% time savings.
Co-development of an innovative thin-film deposition method and associated mechanical components.
Co-led the development of a plasma reactor – throughput increased by 100%.
Experimental design, statistical analysis, and reporting for R&D.

09.2011 - 12.2016

Development Engineer
MEYER BURGER RESEARCH · Hauterive ○
Thin-film development – reduced PECVD CAPEX by 25%.
Developed an electrical model based on genetic algorithms.

— April 2025 —

Publications

- Legradic, B., A. A. Howling, and Ch Hollenstein. *"Radio frequency breakdown between structured parallel plate electrodes with a millimetric gap in low pressure gases."* Physics of Plasmas 17, no. 10 (2010): 102111.

- B. Legradic, *"Arcing in Very Large Area Plasma-Enhanced Chemical Vapour Deposition Reactors,"* Dissertation, École Polytechnique Fédérale de Lausanne, 2011. doi:10.5075/epfl-thesis-5090

- Howling, A. A., B. Legradic, M. Chesaux, and Ch Hollenstein. *"Plasma deposition in an ideal showerhead reactor: a two-dimensional analytical solution."* Plasma Sources Sci. Technol. 21, no. 1 (2012): 015005.

- Hermans, J. P., et al. *"Inkjet printing for solar cell mass production on the PiXDRO JETx platform."* 28th Eur. PV Solar Energy Conf. Exhib., 2013.

- Legradic, B., et al. *"High efficiency Si-heterojunction technology—it's ready for mass production."* 2015 IEEE 42nd PVSC, pp. 1–3.

- Papet, P., et al. *"New cell metallization patterns for heterojunction solar cells interconnected by the smart wire connection technology."* Energy Procedia 67 (2015): 203–209.

- Lachenal, D., et al. *"Heterojunction and passivated contacts: a simple method to extract both n/tco and p/tco contacts resistivity."* Energy Procedia 92 (2016): 932–938.

- Lachenal, D., et al. *"Optimization of tunnel-junction IBC solar cells based on a series resistance model."* Sol. Energy Mater. Sol. Cells 200 (2019): 110036.

- Papet, P., et al. *"Overlap modules: A unique cell layup using smart wire connection technology."* AIP Conf. Proc. 2147, no. 1 (2019): 080001.

- Legradic, B., et al. *"Shadow masking and tunnel contacts: A low cost process for high efficiency IBC solar cells."* 2019 IEEE 46th PVSC, pp. 2546–2549.

- Bätzner, D. L., et al. *"Alleviating performance and cost constraints in silicon heterojunction cells with HJT 2.0."* 2019 IEEE 46th PVSC, Chicago, IL, pp. 1471–1474. doi:10.1109/PVSC40753.2019.8980666

- Ledinský, M., et al. *"In-Line Thickness Imaging Tool and Detailed Study of Interdigitated Back-Contacts for Silicon Heterojunction Solar Cells."* Submitted to Solar Energy Materials and Solar Cells, 2024. Manuscript no. SOLMAT-D-24-01388.

Patents

- Kroll, U., and B. Legradic. *"Plasma processing apparatus and method for the plasma processing of substrates."* US Patent App. 13/128,265, filed Nov. 10, 2011.

- Strahm, B., Legradic, B., Meixenberger, J., Lachenal, D., and Papet, P. *"Solar cell."* US Patent App. 15/323,492, filed June 8, 2017.

- Lachenal, D., Strahm, B., Legradic, B., Frammelsberger, W. *"Hetero junction photovoltaic cell and method of manufacturing same."* EP Patent EP3223318A1, filed Mar. 23, 2016.

- Strahm, B., Legradic, B. *"Substrate Treatment System."* EP Patent EP3399545A1, filed Apr. 5, 2017.