



COST ACTION GREENERING – DATA COLLECTION

First name, Family Name: David Fernandez Rivas

Type (Academic or Industrial): Academic

Country: The Netherlands

Leadership position in the COST: Co-Chair

Working Group in which you are involved: GW2

E-mail: d.fernandezrivas@utwente.nl

Laboratory/Company: University of Twente / spin-off BuBclean www.bubclean.nl

Laboratory/Company info (limited to 400 characters):

Netherlands' most entrepreneurial **university** | The **university** of technology with high social impact | The only all-in campus in Holland.

The research of the Mesocale Chemical Systems (MCS) chair, originates from the group's unique expertise in micro and nanofabrication, backed by the outstanding experimental facilities of MESA⁺ NanoLab.

Link to the home page of the Laboratory/Company:

<https://www.utwente.nl/en/tnw/mcs/>

Fields of expertise (limited to 400 characters):

- The development of 3D micro/nanostructures for solar to electricity to chemical conversion
- Microreactors as a means of chemical process intensification (sonochemistry, high pressure, electricity-driven)
- Miniaturized analytical tools and MEMS-based sensors for a variety of application fields (forensics, health, environment, chemical process control).

5 Main publications or patents:

- Rivas, David Fernandez, Pedro Cintas, and Han JGE Gardeniers. "Merging microfluidics and sonochemistry: towards greener and more efficient micro-sono-reactors." *Chemical communications* 48.89 (2012): 10935-10947.
- Fernandez Rivas, David, et al. "Efficient sonochemistry through microbubbles generated with micromachined surfaces." *Angewandte Chemie International Edition* 49.50 (2010): 9699-9701.
- Peñas, Pablo, et al. "Decoupling gas evolution from water-splitting electrodes." *Journal of The Electrochemical Society* 166.15 (2019): H769-H776.
- Ardo, Shane, et al. "Pathways to electrochemical solar-hydrogen technologies." *Energy & environmental science* 11.10 (2018): 2768-2783.
- Verhaagen, Bram, et al. "Scaled-up sonochemical microreactor with increased efficiency and reproducibility." *ChemistrySelect* 1.2 (2016): 136-139.

Collaborations:



- Miguel Modestino, Multifunctional Materials Lab, NYU, (<http://www.migueldomestino.com>)
- Jan Philipp Hoffman, Inorganic Catalysts Materials, TU/e, (<https://www.tue.nl/en/research/researchers/jan-philipp-hofmann/>)

Facilities:

- Cleanroom, Nanolab, <https://www.utwente.nl/en/mesaplus/infrastructure/nanolab/>
- Multiple lab equipment, <https://www.utwente.nl/en/tnw/mcs/Research/>
- Fast camera imaging.