VIVEK M. BADIANI

Calle Arquímedes, Polanco, Ciudad de México
(+44)7965446235 | vivekbadiani@gmail.com

Skills

Research
Electrocatalysis, photocatalysis, biocatalysis, assays, sustainability, solar fuels, material design & synthesis

Technical
NMR, QCM, ATR-IR, UV-Vis, GC, LCMS, HPLC, & EM

Software
Python, JavaScript, Excel, Affinity Designer

Language
English: Native speaker
Italian: Conversational
Spanish: Conversational

Education

University of Cambridge — *Cambridge, UK*
PhD in Chemistry, Queens' College — *Oct 2018 – July 2022*
- Awarded EPSRC Scholarship (£90,152)
- Worked on exploring the enzyme-material interface for bioelectro- and photocatalytic systems to convert CO_2 into fuel.
- PhD thesis on 'Tailoring the redox enzyme-material interface for electro- and photocatalytic fuel synthesis''

University of Cambridge — *Cambridge, UK*
MRes in Engineering and Physics — *Oct 2017 – September 2018*
(Distinction – 75.4 %)
- Awarded EPSRC Scholarship
- Ranked 3rd in class

University of Nottingham — *Nottingham, UK*
MSci in Chemistry — *Oct 2013 – July 2017*
(1st Class honours – 75.0 %)
- Master's thesis on ''The exploration of extreme spatial confinement in single-walled carbon nanotubes for use as nanocontainers and nanoreactors''
- Year in industry spent in Parma, Italy at Chiesi Farmaceutici on synthesising small drug molecule PI3K inhibitors for chronic respiratory diseases.

Experience

PhD research (www-reisner.ch.cam.ac.uk) — ***Cambridge, UK***
Oct 2018 – July 2022

Independence and creative thinking
- Developed the enzyme-material chemical interface on gold and carbon materials for electro- and photocatalytic conversion of CO_2 to fuel.
- Designed, planned, and executed three successful projects resulting in high impact publications.

Biocatalysis and sustainability
- Developed low-cost, robust, and environmentally friendly homogeneous carbon-based photocatalysts for enzyme interfacing.

Leadership and Management
- Established external collaborations including laboratories in Lisbon, Portugal.
- Supervised undergraduate, Erasmus and PhD students. (Overall 50+)

Communication and networking
- Published 5 papers in high-impact journals – two in prestigious journals (*JACS, Nature Chem.*)
- Presented research in two seminars and two conferences.

Co-founder and CEO of eCO-SENSE Technologies Ltd. ***Cambridge, UK***
(www.eco-sense.info) *April 2019 – March 2020*

Entrepreneurship

- Spun out a technology company focused on precision agriculture.
- Successfully raised £10,000 of equity-free grant funding.
- Built and led a team of 6.
- Successfully carried out a 2-week pilot test and market feasibility study across 5 states in India.
- Set up various partnerships and collaborations including with ARM Holdings, Cambridge Judge Business School and the UK National Institute of Agricultural Botany.

Extracurricular Activities

Innovation, organisation and administration

- Certificate of course completion in Entrepreneurship (Cambridge Judge Business School)
- Accelerate Cambridge Cohort 2019 - highly competitive and world-class entrepreneurship programme aimed at accelerating early-stage ventures through to pre-seed.
- Queens' College Cambridge MCR: Disabilities Officer, MCR Formal Exchange Officer, MCR Diversity Officer
- Sports: Queens' College MCR Football XI, JCR Cricket XI, MCR Squash 2^{nds} Captain, Cambridge University Amateur Boxing Club

Publications

1. Badiani, V.M.; Cobb, S.J.; Wagner, A.; Oliveira, A.R.; Zacarais, S.; Pereira, I.A.C.; Reisner, E. Elucidating Film Loss and the Role of Hydrogen Bonding of Adsorbed Redox Enzymes by Electrochemical Quartz Crystal Microbalance Analysis. *ACS Catal.* **2022**, 12, 3, 1886–1897.

2. Badiani, V.M.; Casadevall, C; Miller, M; Cobb, S.J.; Manuel, R.R.; Pereira, I.A.C.; Reisner, E. Engineering carbon materials for electro- and photocatalytic CO_2 reduction by formate dehydrogenase. *J. Am. Chem. Soc.*, **2022**, 144, 31, 14207–14216.

3. Cobb, S. J.; Badiani, V. M.; Dharani, A. M.; Wagner, A.; Zacarias, S.; Oliveira, A. R.; Zacarias, S.; Pereira, I. A. C.; Reisner, E.; Fast CO_2 hydration kinetics impair heterogeneous but improve enzymatic CO_2 reduction catalysis. *Nat. Chem.*, **2022,** 14, 417-424.

4. Sahm, C. D.; Ciotti, A.; Mates-Torres, E.; Badiani, V.M.; Sokołowski, K.; Neri, G.; Cowan, A.J.; García-Melchor, M.; Reisner, E.; Tuning the local chemical environment of ZnSe quantum dots with dithiols towards photocatalytic CO_2 reduction. *Chem. Sci.* **2022**, 13, 5988-5998.

5. Pichler, C. M.*; Bhattacharjee, S.*; Lam, E.; Su, L.; Collauto, A.; Roessler, M.; Cobb, S.J.; Badiani, V.M.; Rahaman, M.; Reisner, E.; Succinic acid as central intermediate for the bio-electrocatalytic conversion of food waste to ethylene. *ACS Catal., In revision*