

DR MARLON CRUZ

STRATEGIC ADVISOR · EXPERTISE ON MATERIALS AND SURFACE ENGINEERED SOLUTIONS · CIRCULAR ECONOMY
Ballasalla, Isle of Man

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“A cleaner and better world by reducing energy waste”

SUMMARY

- Metallurgic Engineer (recognized as Material Engineer by Spain) with PhD focused on tribology and surface engineering.
- Professional Member of the UK’s Institute of Materials, Minerals & Mining (MIMMM), UK’s Chartered Engineer (CEng), UK’s Chartered Scientist (CSci).
- Both managerial and hands-on experience on setting and carrying out materials testing by using: optical microscope, stereoscopy microscope, scanning electron microscopy, X-ray energy dispersive spectroscopy, contact and optical profilometry, confocal microscope, adhesion tests, abrasion test, cavitation erosion test, sliding wear test, micro and macro hardness, ball cratering micro-abrasion, tensile test, compression test, impact test, microscopy image analysis, EP four-ball tests, fretting test, sliding tribocorrosion, ultrasonic testing, dye penetrant inspection, X-Ray diffraction, electrochemical tests, accelerated environment corrosion test, Raman spectroscopy, nanoindentation, high temperature sliding wear, jet erosion test, vibration test, fatigue test.
- Expertise designing industrial coatings by using PVD Magnetron Sputtering and HiPIMS variant.
- Proven ability to develop and implement effective new systems and procedures.
- Able to work well both independently and as part of a productive team, demonstrating the motivation and multi-tasking abilities required to meet demanding deadlines while maintaining the highest of standards.
- Able to quickly grasp new ideas and concepts.
- Highly skilled and experienced worker, having a progressive, continuous and diverse experience built along 20 years where it have been gained valuables skills managing workforce at Universities, Technological Centre and Industrial manufacturing.

WORKING EXPERIENCE

INDEPENDENT CONSULTANT, MC CONSULTING SERVICES

Isle of Man (March 2019 – present)

Providing consulting, advisory, and technical services when is required expertise on surface engineered solutions, materials testing and selection, tribology, business development, circular economy, sustainability. Main activities include, among other:

- Technical assistance to clients in LatAm and Spain on surface engineering, materials selection, business development.
- Instrumental actions to secure cash flow to SMEs from publicly funded projects on key enabling technologies
- Project Management and remote support on highly technical industrial focused R&D activities.
- Development of coatings processes for manufacturing applications and energy.
- Business development on process and technologies to mining industry, semiconductor, process controllers, lubricants, testing systems.
- Quality auditing (focused on ISO 13485).

CHIEF TECHNICAL OFFICER -CTO- (freelance), PhotonExport
Barcelona -Spain- (May 2021 – present)

Contributing to PhotonExport strategic objective of deepening its R&D presence and knowledge in tribology. PhotonExport is a company with a worldwide customer base which focus on the value chain for vacuum thin film supplies and sputtering targets deeply involved in the world of photonics and microelectronics.

STRATEGIC ADVISOR, Smart Tissues
Tokyo-Japan (Jul. 2019 – present)

- Start-up focused on bioprinting technologies
- Provided advisory services on setting the business aiming a long lasting and organic growth mainly in Japan and LatAm

EXPERT EVALUATOR -- Eurostars Programme - EUREKA –
Brussels Area, Belgium (November 2018 – present)

Independent expert as required to evaluate applications submitted to Eurostars and Network programmes and other national-level R&D programmes around my technical and market expertise background related to materials science and engineering, surface engineering, tribology, processes and product development, circular economy.

- +10 projects evaluated (+15M € total budget) since ending 2018.

RESEARCH ENGINEER – MARIE CURIE FELLOW, *FLUBETECH S.L.*
Castellar del Valles, Barcelona-Spain (September 2017 – February 2019)

Role Description: Working as researcher for the Sludgetreat project which were funded by an EU FP7 Marie Curie Action (Project Number 611593). Marie Skłodowska-Curie Actions (MSCA) fellowships are among Europe's most competitive and prestigious awards, aimed to support the best, most promising researchers to continuing with their professional development and to boost skills exchange between the commercial and non-commercial sectors.

Duties and Responsibilities

Deployed set of skills and expertise by offering key assistance with management of 7 publicly funded co-funded projects (total budget around 1.2M €).

Actively involved in processes development (improvement and development of coatings for dies, moulds, tools), devising internal strategic R&D, mentoring and coaching graduate and master students, helping to quality control department with activities related to ISO-13485 and ISO-9001, setting business development options, designing and implementing R&D KPIs, performing technical and financial audits.

ADVISER, ARIAN Control & Instrumentation

Santiago de Chile, Chile (October 2016 – December 2018)

Advising on implementing guidelines and strategy towards a potential relocation of business (including manufacturing) to Isle of Man and/or Europe. Assessing market feasibility of products already manufactured for introduction into UK and European market. Offering advice about market focused doable products and services which are under development stage.

RESEARCH AND DESIGN DIRECTOR, *Highland Scientific Ltd./ Manx Graphene Ltd.*
Isle of Man (August 2014 – August 2016)

Role Description: Appointment in a privately-owned company with core business revolves around thin film deposition technology and techniques to develop production processes related to carbon-based technologies (DLC coatings and Graphene).

Duties and Responsibilities: Assembled IP of carbon base technologies focused in DLC and graphene production. Mentored staff in industrial research. Engineered systems to produce DLC coatings. Developed and launched testing for proof of concepts of graphene production. Briefed regularly to Board of Directors about the progress of the technology which was developed. Headed day-to-day operations related to previously defined testing procedures. Validated internal procedures for testing.

ASSOCIATED PROFESSOR, *Universidad Simón Bolívar –Materials Science Department-*
Caracas – Venezuela (September 2009 – July 2014)

Role Description: Lecturing and Teaching in topics related to Mechanical Properties with a focus in Tribology. Research in Tribology and Surface Engineering. Consulting and advising companies by technical services or industrial research according to interests of Materials Science Department.

Duties and Responsibilities: Guided undergraduate and graduate students through effective lecturing and teaching in tribology, surface engineering and materials science. Coordinated research in Tribology and Surface Engineering. Supervised undergraduate, graduate and research graduate. Enabled smoothly run of Electronic Microscopy and XRD laboratory. Mentored students in tribology and surface engineering.

• Main projects carried out / directed:

- Tribocorrosion of coated systems
- Cavitation erosion for assessment of adherence of carbides into tool steel
- Ultrasonic evaluation of hard coatings
- Developed evaluation protocols for Lubricants
- Offered assistance in the design of a device for slurry-erosion testing.
- Elaboration of guidelines for recycling processes of batteries
- XRD and SEM for characterization of materials from plastic recycling to be used as material of construction
- Corrosion and Tribocorrosion of aluminium alloys with and without anodising
- Research of Al-Ni Alloys
- XRD of polymeric samples
- Friction on tiles

SENIOR RESEARCHER, *CTM Centre Tecnològic*
Manresa (Barcelona) – Spain (October 2005 – July 2009)

Role Description: Permanent position to develop research topics related to surface engineering and continues investigating the tribology including topics related to applied materials science and focused it at the industrial level.

Duties and Responsibilities: Conducted industrial applied research projects related to physical metallurgy, microstructural and tribomechanical characterization of materials. Designed a PVD coating system. Directed Tribology laboratory.

• Main projects carried out / directed:

- Design and put in service a micro-abrasion tester (internal project).
- Optimization of calibration by drawing and high-speed turning of steel bars to production of shock-absorbers (industrial project)
- Abrasive wear-resistant materials: applications to new tooling and equipment (industrial project).
- Development of a Cathodic Arc Evaporation Equipment for the Nanomechanical to produce and characterize hard coatings (Central Government subvention to Technological Centres).
- Corrosion and abrasive wear assessment for prospective materials which could be used in tools for fertiliser dispersion (industrial project).
- Setting up a Tribology Lab

Additional part-time positions:

Expert Evaluator, *AIDIT*,

Home-based job (November 2008 - September 2009): Evaluated one industrial project in two stages to be funded from national research programs

Adjunct Professor, *Polytechnic University of Catalonia (UPC)*,

Barcelona-Spain (September 2007- September 2008): Taught lab practices for courses of Materials Engineering

DOCTORATE SCHOLARSHIP, *Central University of Venezuela (UCV) - Metallurgical School - Caracas – Venezuela (September 2001- July 2005)*

Role Description: Receiving a grant from the FONACIT (National Fund for Science and Technology) to develop key research related to tribology and surface engineering

Duties and Responsibilities: Developed the program to fulfill the requirements to get the PhD degree. Supported activities and day-to-day operation of research group where was prepared the Thesis.

Additional part-time position:

Lecturer, *Central University of Venezuela (UCV) - Metallurgical School - Caracas – Venezuela (January 2002- August 2004):* Taught 3 undergraduate courses

- Materials/Coatings studied:
 - PAPVD MoZrSiAlN on AISI 1045
 - Various thermal sprayed coatings
 - PAPVD AlxCr(1-X)N
 - Sol-gel coatings
 - Plasma nitrided on tool steel

RESEARCH ENGINEER, *Central University of Venezuela (UCV) -CENMACOR- Caracas – Venezuela (October 2000- February 2002)*

Role Description: Entry level position to support research activities for CENMACOR (New Materials and Corrosion Centre).

Duties and Responsibilities: Conducted relevant research in Surface Engineering and Tribology, prepared tribology testing, devised presentations, and papers. Organised the smoothly running of tribology lab.

- Materials/Coatings studied:
 - Laser Alloying of A-356 aluminium alloy: tribological characterization
 - Electroless Ni-P (SiC enriched): High-temperature wear
 - Pulse Electrode Surface Coatings: characterization and wear behaviour
 - PAPVD coatings: TiN, MoZrAlSi, ZrN
 - Ultra-high-molecular-weight polyethylene (UHMWPE) for biomedical applications
 - TiN by PAPVD on 7075-T6
 - Thermal spray coatings (HVOF) Colmonoy 88, WC-Co

EDUCATION AND QUALIFICATIONS

Doctorate (PhD): Science Engineering (2006)

Personalised Doctorate Program of Engineering Faculty, Central University of Venezuela

Thesis: Tribological Study of an AISI H13 steel with duplex treatments (in Spanish)

BEng (5 years program): Metallurgic Engineer (2000 and recognised as Material Engineer by Spain in 2006) *Universidad Central de Venezuela.*

Diploma: High School Studies –Venezuela- (1994 and recognised by Spain 2005)

ADDITIONAL INFO

ORCID id (publications): <https://orcid.org/0000-0003-4985-3234>

Memberships: UK's Chartered Engineer (CEng) Registrant Number 643256

UK's Chartered Scientist (CSci) Registrant Number IOM/112/000578

Member of the Institute of Materials, Minerals & Mining (MIMMM) Membership No.: 478737

Member of The Institution of Engineering and Technology (MIET) Membership No.: 1100589503

EXECUTIVE TEAM MEMBER – Online Specialist, Institution of Engineering and Technology (IET)

UK (Jan. 2020 – present): Volunteer at IET Tribology Technical Network / Online Specialist

COMMITTEE MEMBER, British Standard Institution (bsi)

UK (August 2017 – present): Non-participating member of: STI/033 Electrodeposited and related coatings.

PARENT GOVERNOR, Ballasalla Primary School

Isle of Man (Sep. 2019 – present): Member of the Governing Body

STEM COMMITTEE MEMBER, Isle of Man Chamber of Commerce

Isle of Man (March 2020 – present)

TRAINED ASSESSOR, The Institute of Materials, Minerals and Mining (IOM3)

INTERNSHIPS, APPRENTICESHIP AND VOLUNTEER EXPERIENCES

Date	Type of Experience	Description
Jan – Feb 2005	Doctorate's internship	Carrying out an internship relating to specific trials framed in the thesis project under the supervision of Dr Jacky Lesage at Institut Universitaire de Technologie de Lille, France
Oct – Dec 2004	Doctorate's internship	Completing an Academic internship under the supervision of Dr José Maria Cabrera at Department of Materials Science and Metallurgical Engineering Polytechnic University of Catalonia, Spain
Sep – Dec 2003	Doctorate's internship	Executing duties as part of an Academic Internship under the supervision of Dr Jorge Feugeas at Institute of Physics Rosario, Argentina
Aug – Oct 1998	Work Experience/Internship	Characterization for quality control tasks of tin coated steel produced by iron and steel manufacturer named Siderúrgica del Orinoco (SIDOR) Venezuela
April 1995- May 2003	Volunteer at Fire Department of Universidad Central de Venezuela	Totally voluntary work which required a year of training (once a week every weekend) to become a certificated Firefighter. Caracas-Venezuela
May-July 1994	Apprenticeship	Work experience related to apprenticeship program in industrial electricity at a newspaper printing press (Caracas-Venezuela)
July– Sept 1993	Apprenticeship	Assistance to a qualified electrician in electricity to work in air conditioning, and industrial refrigeration systems (Caracas-Venezuela)