CURRICULUM VITAE

Dr. Silvano Sommacal

Email: silvanosommacal@hotmail.com; Ph: +61(0)433635752

Education:

2004 **PhD (Earth Sciences); The Australian National University, Canberra, Australia**
"Computational petrology: Subsolidus equilibria in the upper mantle"

1996 **MSc (Geology); University of Padua, Padua, Italy**
Grade point average: 110/110 *cum laude*

Experience:

2022 - Present **Technical Lead; New Frontier Technologies, Canberra, Australia**

New Frontier Technologies (NFT) is an advanced manufacturing company focused on bespoke design, rapid additive manufacture, detailed characterisation and high-fidelity simulation of carbon composite structures for high-performance applications.

As the Technical Lead of the Advanced Diagnostics Team, I am responsible for leading and supervising a team of engineers and technical specialists in the execution of complex industry and research projects. These projects primarily focus on the acquisition and analysis of 3D computed tomography (CT) images of composite and other advanced materials, with applications in high-value sectors such as Space, Aerospace, Defence, and Energy. In this role, I am involved in the entire project lifecycle, from initial scoping and design to managing core activities, executing and implementing solutions that ensure the outcomes are innovative, high-quality, and delivered on time. A significant aspect of my work involves digital twinning of materials and structures, which is crucial for performance simulation and predictive maintenance in critical sectors. I also play a key role in customer and stakeholder engagement, working closely with clients and external organizations ensuring that commercial industry projects are well-defined and aligned with the needs of both our company and external partners. My responsibilities extend to the strategic side of the business, where I prepare and submit proposals for government funding to secure additional resources, enhance capabilities and drive forward research and development (R&D) initiatives.

2018 - 2022 **Research Fellow/Project Manager; ARC Training Centre for Automated Manufacture of Advanced Composites, The Australian National University, Canberra, Australia**

The Automated Manufacture of Advanced Composites (AMAC) ARC Training Centre was a collaboration between the Australian National University, the University of New South Wales, the Technical University of Munich and industry partners from sectors like aerospace, automotive, and elite sport that combined world class composites manufacturing capabilities with a high-value, industry focused research training experience to nurture and develop future innovators.

At the AMAC Centre, I led and served as the primary analyst for the research program focused on material characterisation, playing a crucial role in supporting the design and performance simulation of high-value products. I was responsible for scoping, managing and executing industry-driven research projects centred on the characterisation of advanced composite materials. My research was based on the acquisition and analysis of 3D CT images, which provided critical data for understanding material behaviour and enhancing the accuracy of performance simulations. As the principal point of contact for the Centre's industry partners, I facilitated and nurtured collaborations with researchers both nationally and internationally. My work culminated in the publication of original and innovative findings in peer-reviewed journals and presentations at international conferences. Additionally, I supervised and mentored undergraduate and higher degree research students engaged in material characterisation projects within the Centre. I also contributed to a multidisciplinary team composed of analysts, researchers, and laboratory technicians from Thermo Fisher Scientific and ANU that worked on the development and commercialisation of HeliScan™ micro-CT instruments, as well as associated reconstruction software and analysis packages.

2012 - 2017 **Project Manager/Senior Analyst; Thermo Fisher Scientific, Canberra, Australia**

The Canberra based Oil & Gas division of Thermo Fisher Scientific (TFS Oil & Gas, previously FEI Oil & Gas, Lithicon, Digitalcore), was a formerly ANU based start-up service company that provided leading-edge digital rock research and technology services to oil and gas companies and universities worldwide and to carbon capture and storage research initiatives, and also designed, built and sell pore-scale micro-CT equipment.

As a Project Manager at TFS Oil & Gas, I have successfully led and executed end-to-end project lifecycles, from client engagement and proposal writing to project management, execution, and final deliverables. My project management experience includes the acquisition, processing, and compilation of experimental data into ready-to-use databases, ensuring high-quality outputs tailored to client needs. As a Senior Analyst, I specialised in the interpretation of 2D/3D digital core imaging data, including micro-CT, SEM, SEM-EDS, and FIBSEM, to characterise porosity, pore structure, and petro-physical

properties of reservoir rocks. My work has contributed to understanding the permeability, conductivity, and elastic properties of conventional and unconventional rocks, as well as identifying and mapping the distribution of mineral phases. In my role as the main mineralogist at TFS, I have processed over 300 automated mineralogy mapping datasets (QEMSCAN/NanoMin) and over 1,000 back-scattered SEM (BSEM) images, optimising the classification of minerals for applications in oil and gas and carbon sequestration sectors. My responsibilities at TFS Oil & Gas, have also included mentoring and training analysts, managing workflows, and ensuring quality control throughout the analytical process.

2007 - 2012 **Project Manager/Senior Geoscientist; FrOG Tech Pty Ltd, Canberra, Australia**

From Oil to Groundwater (FrOG) Tech was a consultancy firm that provided geological regional and basin-scale projects for oil and gas, minerals and unconventional resources industry clients and for geothermal and groundwater research initiatives worldwide.

During my tenure at FrOG Tech, I led and contributed to numerous basin evaluation projects, primarily focused on the interpretation of gravity, magnetic, and satellite data. These projects served the petroleum, minerals, geothermal, groundwater, and unconventional resources industries, guiding acquisition strategies and minimising exploration risk. As a Senior Geoscientist, I specialised in designing and developing detailed structural basin evolution models. My work involved analysing and interpreting basement structures and terranes, as well as evaluating the location, geometry, and tectonic evolution of depocentres and intrabasinal features. In my role as Project Manager, I managed and coordinated a multidisciplinary team of 6-7 professionals, including structural geologists, stratigraphers, and GIS experts. I oversaw the integration of their work into final deliverables, ensuring projects were completed on time and within budget. My responsibilities also included client liaison, presenting the results of various project phases, and maintaining clear communication to ensure alignment with client expectations.

2006 - 2006 **AuScope Project Coordinator**; **Access Macquarie Ltd, Sydney, Australia**

AuScope is an organisation that was created to establish and administer a National Earth Science Infrastructure Program for the country of Australia in the period 2007-2011.

In 2006, I served as the Project Coordinator for the AuScope Project. My role involved coordinating the integration of various project components into a cohesive bid. I worked closely with the project's Facilitator and business consultants (ACIL Tasman), to ensure that the investment plans were scientifically sound and aligned with the project's objectives. Additionally, I managed the editing, production, and delivery of progress reports, ensuring all documentation met the required standards and deadlines.

2004 - 2005 **Postdoctoral Fellow; The Australian National University, Canberra, Australia**

My postdoctoral research focused on defining the melting behaviour of Earth, other terrestrial planets, rocky moons, and meteorites within the solar system. Aimed at improving our understanding of deep Earth processes, my work addressed a national priority by investigating the formation of Australian mineral resources, which provides the foundation for estimating their quantities and assessing potential exploitation. In this multidisciplinary project, I utilised advanced laboratory techniques alongside a computer modelling-based approach. Additionally, I collaborated on several interdisciplinary research projects, where my primary responsibility was updating the code of two computer programs designed to derive internally consistent thermodynamic databases and compute phase equilibria calculations based on composition, temperature, and pressure.

2001 - 2004 **Contract Geochronologist; Geoscience Australia, Canberra, Australia**

During my PhD studies, I worked as a casual employee at Geoscience Australia (GA), where I operated advanced ion microprobes for U-Pb zircon geochronology data acquisition.

1997 - 1998 **Hydrocarbon Logging Engineer; Geoservices International S.A., Paris, France**

Geoservices was a technical consultancy company specialised on up-stream (drilling and production) oil and gas projects.

In 1997 and 1998, I worked as a Hydrocarbon Logging Engineer in the Democratic Republic of Congo, Africa, consulting for TOTAL, ExxonMobil, and ENI. My primary responsibilities included surveying and interpreting drilling and mud parameters, collecting and examining cuttings, recovering and processing cores, and detecting and analysing gas. I also prepared logs and reports and was responsible for the installation, calibration, and maintenance of sensors and equipment. Additionally, I managed the organisation of work tasks and coordinated the shifts of several local employees.