Ficha LA - versão 2.1

A - Caracterização do LA	**LA**	1. Nome/Designação do LA	CICECO – Instituto de Materiais de Aveiro / CICECO - Aveiro Institute of Materials
		2. Acrónimo do LA	CICECO
		3. Referência FCT	LA/P/0006/2020
		4. Coordenador do LA	João Manuel Costa Araújo Pereira Coutinho; jcoutinho@ua.pt - 234 401 507
		5. Data da atribuição do estatuto de LA	2002
		6. Webpage	http://www.ciceco.ua.pt/
		7. Classificação FCT	95/100
		8. Financiamento Complementar FCT Total	4,403,853.00
	Unidade de I&D Principal	1. Nome/Designação da Unidade de I&D	CICECO – Instituto de Materiais de Aveiro / CICECO - Aveiro Institute of Materials
		2. Acrónimo	CICECO
		3. Personalidade jurídica	Fundação pública com regime de direito privado
		4. Coordenador	João Manuel Costa Araújo Pereira Coutinho; jcoutinho@ua.pt - 234 401 507
		5. Contactos gerais	Morada: CICECO, Complexo de Laboratórios Tecnológicos, Campus Universitário de Santiago, 3810-193 Aveiro, Portugal
		6. Webpage	http://www.ciceco.ua.pt/
		7. Classificação FCT	Excelente
		8. Financiamento Base FCT Total	4,027,570
		9. Financiamento Programático FCT Total	1,075,000
	Unidade de Gestão Principal	1. Nome/Designação	Universidade de Aveiro
		2. Personalidade jurídica	Fundação pública com regime de direito privado

B - Constituição da equipa de investigação do LA	N.º de investigadores integrados com PhD		200
	N.º de ETIs integrados		181
	N.º de técnicos		18
	N.º de doutorandos		203
	N.º de outros colaboradores com PhD		13
	N.º de outros colaboradores sem PhD		52
C - Missão do LA	1. Mission Statement/Objetivos principais		Mission of CICECO: To develop the scientific and technological knowledge necessary for the innovative production and transformation of materials for a sustainable development and the benefit of society (from ceramics to soft matter and hybrids). Vision of CICECO: To strengthen our leading role as an inter-disciplinary European research laboratory in the field of materials; Contribute to the development of a scientific culture at the
D - Áreas Científicas	1. Área Científica 1		Engenharia dos Materiais Materials Engineering
	2. Área Científica 2		Nanotecnologia Nanotechnology
	3. Área Científica 3		
	4. Área Científica 4		
	5. Área científica 5		
E - Palavras-chave	1. Palavra-chave 1		Materials
	2. Palavra-chave 2		Nanosciences
	3. Palavra-chave 3		Sustainability
	4. Palavra-chave 4		Bioengineering
	5. Palavra-chave 5		
F - Linhas Temáticas	1. Linha Temática 1		
		1. Designação da LT	Materials Science and Engineering, and Nanotechnology
		2. Coordenador da LT	João Amaral & Andrei Kavaleuski
		3. Contactos do Coordenador	phone: 23437 925 e-mail: jamaral@ua.pt phone: 234370118 e-mail: akavaleuski@ua.pt
		4. Descrição da LT	Context This thematic line is focused on the core business of CICECO, which has granted us international recognition. CICECO joins scientists from the Departments of Chemistry, Physics and Materials Engineering, allowing a holistic approach to materials: synthesis, structure, properties, modelling, devices and interface with industry. This is crucial to face real-world problems and challenges. This thematic line concerts directly with the FCT 'Thematic Agenda for Industry and Manufacture' that aims to promote at a sustainable industry and manufacturing, and to contribute to increase the Portuguese industry competitiveness. Five thematic domains are considered strategic to spur industrial manufacturing in Portugal: advanced materials; advanced industrial technological processes; efficient resources and processes management; robotics and intelligent manufacturing systems; collaborative networks and human centred industrial production. Most Thematic Agenda scientific aims and core objectives are covered in this CICECO Thematic Line, listed below. Scientific aims - To design, prepare, process and characterize: Inorganic and organic-inorganic multifunctional materials and nanostructures of different (0-3D) dimensionality, for the information and communications technologies (optical, magnetic properties), photovoltaics, catalysis, biological and environmental applications; ferroics and nanostructures for integration in electronic, magnetic, electromechanic, thermal or biomedical devices and energy saving applications; - To increase the performance and added value of materials via surface functionalisation for corrosion protection, wear resistance, various sensors, and innovative multifunctional configurations; - To study molecular systems structure, from atoms to devices, calculate their physicochemical and electronic properties, predict their behaviour, viz., under pressure and temperature.
	2. Linha Temática 2	1. Designação da LT	Sustainability and Circular Economy
		2. Coordenador da LT	Carla Vilela
		3. Contactos do Coordenador	phone: 234401464 e-mail: cvilela@ua.pt
		4. Descrição da LT	Context Sustainability and Circular Economy is an overarching goal of the EU long-term vision and of Horizon Europe programs, and is also enshrined in CICECO mission. Thus, sustainability is a driving force for all CICECO groups, even if it is the core business of G4, with significant contributions of Groups 1 and 3. It comprises research on more efficient green materials, processes and products through the development of biorefinery and circular economy frameworks for the use of biomass (from agroforest and maritime origin) as source of raw materials for chemicals, materials, and fuels production. It addresses also sustainable energy production, harvesting, and storage; pollution control by dealing with decontamination of air and water; and closing the loops in materials reuse and waste valorisation under a Circular Economy perspective. Sustainability challenges are central to the European Green Deal and the transition for a Circular Economy model is core on the policies of the present European Commission. Scientific aims - To develop new products based on renewable resources to replace fossil raw materials as sources of commodities and specialty chemicals, materials and fuels, based on sustainable processes; - To address in particular the "plastic problem" by developing biobased and biodegradable functional polymers, and processes that enhance the circularity of conventional plastics; - To develop new processes to add value to waste streams, by recovering, or converting them, into a secondary source of raw materials; - To design, prepare, process and characterize new materials for pollution control, in particular materials to assist the decarbonisation of industrial processes by CO2 separation, capture and conversion; (ad/ab)sorbents or new catalysts to remove contaminants from air (e.g., NOx, CO, VOCs) or water (e.g., heavy metals, drugs, pesticides and persistent pollutants); - To develop and design materials and devices for sustainable energy production, namely energy harvesting, energy storage, thermoelectric energy conversion, and more efficient thermal processes without greenhouse gases; - To assess the environmental impact of the novel solvents, materials, products and processes being studied.
	3. Linha Temática 3	1. Designação da LT	Biomedical Science and Engineering
		2. Coordenador da LT	Vitor Sencadas
		3. Contactos do Coordenador	phone: 234370200 e-mail: vsencadas@ua.pt
		4. Descrição da LT	Context This thematic line works at the interface between health-sciences/technologies and materials, pursuing CICECO's goals of generating scientific and translatable value from the regional up to international level through development of innovative products and services for pharmaceutical, medical devices, and advanced health care applications. CICECO's scientists develop multidisciplinary efforts, supported by a solid scientific basis, to ultimately transfer the knowledge created to the economic sector, as therapeutic and diagnosis approaches that may improve the quality of life of patients. Scientific Aims - Biomaterials for regenerative medicine and disease modelling: development of inorganic, macromolecular, composite or self-assembled molecules, processed by advanced methodologies to develop biomedical and cells-combined constructs that may be used in tissue engineering and personalised medicine, both for therapies to regenerate damaged tissues, and as platforms for in vitro drugs screen; - Cell-based therapies for prevailing relevant health problems, exploring scaffold-free, nanobiomaterials and surface cell engineering approaches; - In silico methodologies: use of quantum calculations and molecular dynamics simulations for the modelling the interaction of drugs with biological targets; - Analytical tools: metabolomics to assess material-organism interactions and improve disease management, monitoring of complex cellular processes and biomaterials development; - Sustainable strategies in biomedicine: valorisation of natural products and wastes for the development of advanced and multifunctional biomaterials; use of mild and green processes for the development of cost-effective purification processes for biopharmaceuticals.