CV Date	05/10/2022

Part A. PERSONAL INFORMATION

First Name *	Miguel Angel		
Family Name *	Rubio Alvarez		
Sex *	Male	Date of Birth *	
ID number Social Security, Passport *		Phone Number *	(+34) 913987129
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Researcher's identification number	Open Researcher and Contributor ID (ORCID) *	0000-0002-4210-0443	
	Researcher ID	A-4093-2008	
	Scopus Author ID	57200105177	

*** Mandatory**

A.1. Current position

Job Title	Catedrático de Universidad		
Starting date	1996		
Institution	Universidad Nacional de Educación a Distancia		
Department / Centre	Física Fundamental / Facultad de Ciencias		
Country	Spain	Phone Number	913987129
Keywords	Monolayers; Rheology; Colloids; Polymers; Complex fluids		

A.2. Previous positions

Period	Job Title / Name of Employer / Country
2016 -	Director del Departamento de Física Fundamental / Universidad Nacional de Educación a Distancia

A.3. Education

Degree/Master/PhD	University / Country	Year
Doctor en Ciencias Físicas	Universidad Nacional de Educación a Distancia	1985
Licenciado en Ciencias Físicas, con Grado	Universidad Complutense de Madrid	1979

A.4. General quality indicators of scientific production

Sexenios de investigación: (todos los posibles). Último concedido: 2012-2017.

Tesis dirigidas en los últimos 10 años: 2 de un total de 8. Cuatro de ellas obtuvieron Premio Extraordinario de Doctorado. Entre julio del 2009 y julio del 2013 fui Vicerrector de Profesorado y Vicerrector 1º y decidí no dirigir Tesis Doctorales durante dicho periodo.

Número total de artículos publicados en revistas: 71; 50 (70%) en el primer cuartil (Q1).

Factor h: 24 (Google Scholar); 22 (Publons)

Número de citas totales: 2.804 (Google Scholar); 1.926 (Publons).

Número medio de citas por artículo: 39,5 (Google Scholar); 27,13 (Publons)

Promedio de citas por año en los últimos 5 años: 129,8 (Google Scholar); 91,6 (Publons).

Part B. CV SUMMARY

I started my doctorate studies at the end of 1981 under the supervision of Prof. Manuel G. Velarde. In the pre-doctoral period I carried out experimental research stays at CEA (Saclay, France, 6 months in total; supervised by Dr. Pierre Bergé and Dr. Monique Dubois) and at the Istituto Nazionale di Ottica (Florence, Italy, 16 months in total; supervised by Prof. F.Tito Arecchi

and Dr. Sergio Ciliberto). I obtained a PhD in Physics in 1985 from UNED and a permanent position as Adjoint Professor at UNED in 1988. At that time my research focused on nonlinear dynamics in different physical systems (Rayleigh-Bénard and Bénard-Marangoni convection, Helmholtz oscillator, etc.) and I published several scientific articles with wide repercussion. Notably, two in Phys Rev. Lett., with 181 and 166 citations (Publons index). From November 1988 to January 1990, I enjoyed a research stay at Prof. Jerry P. Gollub's lab (Haverford College, USA), funded by a senior fellowship from the Scientific Office of NATO, during which I worked on the structure of fluid interfaces in porous media imbibition as model systems for surface growth with quenched noise, also with wide repercussion (Phys. Rev. Lett., with 278 citations).

Overall, I have published 68 articles in highly recognized scientific journals such as Phys. Rev. Lett. (7), Phys. Rev. E (9), Appl. Phys. Lett. (3), J. of Rheology (3), J. Colloid Interf. Sci. (3), Adv. Coll. Interf. Sci (1), Current Opinion in Coll. Interf. Sci. (1), etc., which have obtained 1746 citations according to Publons index (2498 according to Google Scholar).

At the beginning of 1990 I started the activities of the Complex Systems Laboratory at UNED. Since then my interests have focused on experimental Soft Matter Physics (colloids, polymers, interfaces, etc.). In 1996 I obtained a position as University Professor at UNED, working in the Applied Physics area. Between 1996 and 2009 my research focused on magnetic colloids, collaborating with GG Fuller (U. Stanford, USA) and A.A. García (U. Arizona State, USA). We obtained relevant results on the aggregation kinetics of superparamagnetic particles in suspension under stationary and rotating magnetic fields and on the use of magnetic particles in the microfluidics of drops standing on superhydrophobic surfaces. In July 2009 I was appointed Vice-Rector for Teaching Staff of the UNED and, in September 2010, First Vice-Rector, positions that slowed down my research activity during the four years in office (until July 15, 2013). Subsequently, I started a new line of research focused on the mechanical properties of Langmuir monolayers, where we have achieved significant improvements in the magnetic needle interfacial shear rheometer, using magnetic microwire probes and magnetic tweezers to control their movement. The results are impressive gains in the instrument's resolution (a 1000 factor) and in the stability of the sample-probe system, that lead to a granted european patent whose licensing is being negotiated with Biolin Scientific. Furthermore, we have extended with great success the flow field-based data analysis techniques to the case of rotational rheometers with different probes. At present my main research interests are: i) the development of new interfacial rheology techniques, both shear and dilatational, and ii) the interfacial rheology of monomolecular films of soft matter systems (fatty acids, insoluble polymers, proteins, lipids of biomedical interest, biofilms, etc.).

Part C. RELEVANT ACCOMPLISHMENTS

C.1. Publications

AC: corresponding author. (nº x / nº y): position / total authors. If applicable, indicate the number of citations

1. **Scientific paper**. P. Domínguez; M. Pancorbo; F. Ortega; M.A. Rubio. 2018. JColloids: Image analysis for video-microscopy studies of colloidal suspensions Computer Physics Communications. Elsevier. 231, pp.243-244. https://doi.org/10.1016/j.cpc.2018.04.033
2. **Scientific paper**. P. Sánchez-Puga; J. Tajuelo; J.M. Pastor; M.A. Rubio. 2021. BiconeDrag updated–A data processing application for the oscillating conical bob interfacial shear rheometer Computer Physics Communications. North-Holland. 267, pp.108074.
3. **Scientific paper**. P. Sánchez-Puga; J. Tajuelo; J.M. Pastor; M.A. Rubio. 2021. Dynamic Measurements with the Bicone Interfacial Shear Rheometer: The Effects of the Numerical Implementation of the Interfacial Boundary Condition Colloids and Interfaces. MDPI. 5-1, pp.1-17.
4. **Scientific paper**. Pablo Sánchez Puga; Javier Tajuelo Rodríguez; Juan Manuel Pastor Ruiz; Miguel Ángel Rubio Álvarez. 2020. Flow field-based data analysis in interfacial shear rheometry Advances in Colloid and Interface Science. Elsevier. https://doi.org/10.1016/j.cis.2020.102332

5 **Scientific paper**. Óscar Toledano; Miguel Ángel Rubio Álvarez; Óscar Gálvez. 2020. Energetics and structures of the tilted phases of fatty acid Langmuir monolayers Phys. Chem. Chem. Phys.Royal Society of Chemistry. 22, pp.12092-12103. https://doi.org/10.1039/D0CP01361G

6 **Scientific paper**. Pablo Sánchez-Puga; Javier Tajuelo; Juanma Pastor; M.A. Rubio. 2019. BiconeDrag—A data processing application for the oscillating conical bob interfacial shear rheometer Computer Physics Communications. Elsevier. 239, pp.184-196.

7 **Scientific paper**. Pablo Sánchez-Puga; Javier Tajuelo; Juanma Pastor; M.A. Rubio. 2018. Dynamic Measurements with the Bicone Interfacial Shear Rheometer: Numerical Bench-Marking of Flow Field-Based Data Processing Colloids and Interfaces. MDPI. 2-4, pp.69-87.

8 **Scientific paper**. E. Guzmán; J. Tajuelo; J.M. Pastor; M.A. Rubio; F. Ortega; R.G. Rubio. 2018. Shear rheology of fluid interfaces: Closing the gap between macro- and micro-rheology Current Opinion in Colloid & Interface Science. Elsevier. 37, pp.33-48. https://doi.org/10.1016/j.cocis.2018.05.004

9 **Scientific paper**. F. Martínez-Pedrero; J. Tajuelo; P. Sánchez-Puga; R. Chuliá-Jordán; F. Ortega; M.A. Rubio; R.G. Rubio. 2018. Linear shear rheology of aging ?-casein films adsorbing at the air/water interface Journal of Colloid and Interface Science. Elsevier. 511, pp.12-20. https://doi.org/10.1016/j.jcis.2017.09.092

10 **Scientific paper**. J. Tajuelo; J.M. Pastor; M.A. Rubio. 2017. Flow field based data processing for the oscillating conical bob interfacial shear rheometer Journal of Rheology. The Society of Rheology. 62-1, pp.295-312. https://doi.org/10.1122/1.5012764

11 **Scientific paper**. J. Tajuelo; E. Guzmán; F. Ortega; R.G. Rubio; M. A. Rubio. 2017. Phase diagram of fatty acid Langmuir monolayers from rheological measurements Langmuir. American Chemical Society. 33, pp.4280-4290. https://doi.org/DOI: 10.1021/acs.langmuir.7b00613

C.2. Conferences and meetings

1 Pablo Sánchez Puga; Javier Tajuelo Rodríguez; Juan Manuel Pastor Ruiz; Miguel Ángel Rubio Álvarez. Nonlinear interfacial strain profiles in the magnetic needle ISR and the constant strain operation modes. Annual European Rheology Conference. European Society of Rheology. 2022. Spain. Conference.

2 Miguel Ángel Rubio Álvarez; Pablo Sánchez Puga; Javier Tajuelo Rodríguez; Juan Manuel Pastor Ruiz. Two-dimensional melting in untilted phases of fatty acid Langmuir monolayers: a thermo-rheological study. Liquid Matter Conference. European Physical Society. 2021. Conference.

3 Pablo Sánchez Puga; Javier Tajuelo Rodríguez; Juan Manuel Pastor Ruiz; Miguel Ángel Rubio Álvarez. Flow field-based data analysis for rotating microfabricated probes (the microbutton ISR). Annual European Rheology Conference. European Society of Rheology. 2021. Conference.

4 Pablo Sánchez Puga; Javier Tajuelo Rodríguez; Miguel Ángel Rubio Álvarez. Phase transitions in fatty acid Langmuir monolayers: a thermo-rheological study of the transitions to the LS phase. 10th International Colloids Conference. Elsevier. 2020. Spain. 'Participatory - poster. Conference.

5 Pablo Sánchez Puga; Javier Tajuelo Rodríguez; Juan Manuel Pastor Ruiz; Miguel Ángel Rubio Álvarez. Thermo-rheological studies of phase transitions in fatty acid Langmuir monolayers: Transitions to the LS phase. 18th International Congress on Rheology. 2020. Brazil. Participatory - oral communication. Conference.

6 Miguel Ángel Rubio Álvarez; Javier Tajuelo Rodríguez; Juan Manuel Pastor Ruiz; Pablo Sánchez Puga. Dynamic measurements with the bicone interfacial shear rheometer: Flow field based data processing.. 16th Conference of the International Association of Colloid and Interface Scientists. International Association of Colloid and Interface Scientists. 2018. Holland. Participatory - oral communication. Conference.

7 Fernando Martínez Pedrero; Javier Tajuelo Rodríguez; Pablo Sánchez Puga; Francisco Ortega; Miguel Ángel Rubio Álvarez; Ramón González Rubio. Linear shear rheology of aging B-casein films adsorbing at the air/water interface. 12th Annual European Rheology Conference. The European Society of Rheology. 2018. Italy. Participatory - oral communication. Conference.

8 Javier Tajuelo Rodríguez; Juan Manuel Pastor Ruiz; Miguel Ángel Rubio Álvarez. The bicone interfacial shear rheometer revisited: Flow field based data processing for the oscillating conical bob. 12th Annual European Rheology Conference. The European Society of Rheology. 2018. Italy. Participatory - oral communication. Conference.

9 Javier Tajuelo Rodríguez; Eduardo Guzmán; Ramón González Rubio; Francisco Ortega; Miguel Ángel Rubio Álvarez. Phase transitions in fatty acid Langmuir monolayers: Interfacial shear rheology results. VII Iberian Meeting on Colloids and Interfaces. 2017. Spain. Participatory - oral communication. Conference.

10 Javier Tajuelo Rodríguez; Eduardo Guzmán; Francisco Ortega; Ramón González Rubio; Miguel Ángel Rubio Álvarez. The unusual interfacial shear rheology of fatty acid/alcohol Langmuir monolayers. 11th Annual European Rheology Conference. European Society of Rheology. 2017. Denmark. Participatory - oral communication.

C.3. Research projects and contracts

1 **Project**. Teoría del Coarse-Graining y técnicas experimentales para sistemas biológicos multiescala. Ministerio de Ciencia e Innovación. Pep Español Garrigós. (Universidad Nacional de Educación a Distancia). 01/09/2021-31/08/2024. 145.200 €.

2 **Project**. Estructura y Dinámica Multiescala en Materia Blanda. Ministerio de Ciencia e Innovación. Investigación. José Español Garrigós. (Universidad Nacional de Educación a Distancia). 01/01/2017-31/12/2019. 54.450 €.

3 **Project**. Reología interfacial y estabilidad de películas delgadas fluidas. Ministerio de Ciencia e Innovación. Investigación. Miguel Ángel Rubio Álvarez. (Universidad Nacional de Educación a Distancia). 01/10/2017-30/09/2018. 10.000 €.

4 **Contract**. Collaboration agreemente by and between UNED and Biolin Scientific Miguel Ángtel Rubio Álvarez. 15/02/2021-15/02/2036.

C.4. Activities of technology / knowledge transfer and results exploitation

1 Miguel Ángel Rubio Álvarez; Javier Tajuelo Rodríguez; Juan Manuel Pastor Ruiz. 16829899.0 - 1001 / 3330695. Magnetic needle interfacial shear rheometer and system and method for actuating same 09/09/2020. Universidad Nacional de Educación a Distancia.

2 Miguel Ángel Rubio Álvarez; Javier Tajuelo Rodríguez; Juan Manuel Pastor Ruiz. P201531113. Reómetro interfacial de cizalla por aguja magnética y sistema y método de accionamiento del mismo Spain. 01/12/2017. Universidad Nacional de Educación a Distancia, Universida Politécnica de Madrid.

3 Miguel Ángel Rubio Álvarez; Javier Tajuelo Rodríguez; Fernando Martínez Pedrero; Ramón González Rubio; Francisco Ortega Gómez; Juan Manuel Pastor Ruiz. P201431106. Procedimiento de calibración para sondas magnéticas de reómetros interfaciales de cizalla por aguja magnética Spain. 26/05/2015. Universidad Nacional de Educación a Distancia, Universidad Complutense, Universidad Politécnica de Madrid.