

# Prof. Dr. Miriam C. Strumia

## Biography abstract

Dr. Miriam Strumia received her doctoral degree in Organic Chemistry in 1982 from the Universidad Nacional de Córdoba, Argentina under the supervision of Prof. Hector Bertorello.

She was a postdoctoral research fellow with Prof. George Newkome in Dendritic Chemistry at the University of South Florida, United State (1995).

Prof. Strumia has directed fourteen doctoral and three masters thesis and has more than 165 scientific international publications in the field of polymer and dendritic chemistry.

Her main research interest are the synthesis and chemical modification to obtain new polyfunctional materials or hybrids nanomaterials, with specific application properties in nanomedicine, biomedical materials, active and intelligent packaging, electrochemical sensors, and drug delivery devices.

## Professional Position (Current)

- Research and Academia
- Superior Researcher (*ad-honorem*). National Research Council of Argentina (CONICET) (2015-2019). Retired and with a contract (From 2019)
  - Emeritus Professor (2020). Chemistry Faculty of National University of Córdoba, Argentina.
  - Academic of the National Academy of Sciences (2019-Actual)
  - President of National Society of Research in Organic Chemistry (SAIQO) (2021- 22023)

## Academic education

- 1995 Postdoctoral Training. Center for Molecular Design and Recognition. Department of Chemistry. University of South Florida. Tampa. Florida. USA. Direction: Prof. George Newkome.
- 1984-1988 Postdoctoral Research. Río Tercero Petrochemical Industry, Córdoba, Argentina.
- 1979-1982 Doctoral Degree in Chemical Sciences, UNC.
- 1974-1978 Degree in Chemistry (in Organic Chemistry). UNC.

## Position in university and academic management

- 1994-1996 and 2000-2002 Director of the Department of Organic Chemistry

2008-2011	Director of the Center for Applied Chemistry (CEQUIMAP)
2008-2011	Vice Dean of Faculty of Chemical Sciences (UNC)
2011-2014	Dean of the Faculty of Chemical Sciences (UNC)
2016-2018	Head of the Science, Technology and Productive Innovation Management Area of the National University of Córdoba
2018-2022	Director of the Institute for Research and Development of Applied Chemical Process Engineering (IPQA), a dependency shared between CONICET and the National University of Córdoba

### **Research Interest**

Design, synthesis, and characterization of polymeric and dendritic functional structures applied to the construction of tailored (nano) materials. Iteratively prepared polymers and supramolecular materials, oligomeric and monomeric organic intermediates and classical organic synthons. Nanogels. Hybrids nanomaterials. Natural and biodegradable polymers. Nanomedicine. Active and intelligent packaging. Agropackaging.

### **Projects (last three years)**

- Project FONCYT-PICT-2011-0654. Res. FONCYT: 140/12.  
Title: Synthesis of new nanomaterials from polymers and dendritic molecules. Characterization and applications. Director: Strumia, Miriam Cristina. **(2015-2021)**
- Project PIO CONICET - YPF 2016-2021 Nro.:133-201501-00037CO  
Synthesis of polymers with EOR applications. Directora: Miriam Strumia
- Project: Research Consolidar (type 3), 2018-2022, SECYT, National University of Córdoba, “Research Smart materials” Director: Dra. Marisa Martinelli. Integrante del grupo responsable. Res. 411- 18. <https://www.unc.edu.ar/sites/default/files/anexo%20Res.411-18.pdf>
- Research Project for Institutes – PUE- 2018. For IPQA. Director: Dra. Miriam Strumia. Technical Director: Dra. Raquel Martini. “Development of smart materials to meet technological needs” Res.2019-574 APN-Conicet.
- Project for equipment PICT-2018- 0380. Director: Dra. Miriam Strumia. “Development of smart materials to meet technological needs” Res. IF-2020-31078490-APN-FONCYT.

## Formation of RRHH

- Director of 14 doctoral theses completed
- Director of 2 y co-director of 1 theses of magister completed
- Director of 1 doctoral thesis and co-director of 1 magister thesis in course

## Awards

-1st. Award for the “Synthesis and characterization” section at the I Argentine-Chilean Binational Symposium on Polymers. V Argentine Symposium on Polymers. Mar del Plata, December 2001, to the work “Influence of the morphology of polymeric adsorbents in the retention of o-phosphoamino acids”. Gomez, C. Alvarez, and M. Strumia.

- INNOVAR 2007 Award (Mention in the Applied Chemistry area) and Award from the World Intellectual Property Organization to the research team: Vanina Costamagna, Daniel Wunderlin and Miriam Strumia, for their work "Antimicrobial Active Packaging" in the Applied Research category. Organized by the Secretariat of Science, Technology and Productive Innovation of the Ministry of Education, Science and Technology, jointly with the Ministry of Economy and Production and the National Institute of Technological Education, Buenos Aires.

-Award for the Best Master's Thesis of Master Vanina Costamagna on the subject: "Chemical modification of films used for food packaging" awarded by the Argentine Association of Materials (SAM). November 2008. Carried out under the direction of Dr. Miriam Strumia.

- INNOVAR 2010 Award (Mention in the Linking and Technology Transfer category, Public University sub-category) awarded to the Center for Applied Chemistry (CEQUIMAP) of the National University of Córdoba. Director: Miriam Strumia. Organized by the Secretariat of Science, Technology and Productive Innovation of the Ministry of Education, Science and Technology, together with the Ministry of Economy and Production and the National Institute of Technological Education.

-Award for the best research work on nanostructured materials: “Nanostructuring of polypropylene surfaces, obtaining superhydrophobic surfaces with different wettability states”. Cintia Contreras, Daniel Weibel and Miriam Strumia. Awarded at the 13th International Congress on Science and Technology in Metallurgy and Materials, held in Misiones from August 20 to 23, 2013.

-Award for the best Doctoral Thesis in the Physical-Chemistry Area of Dr. Julieta Paez, Thesis approved in November 2011, awarded by the Argentine Society of Organic Chemistry (SAIQO), Mar del Plata, November 2013. Carried out under the direction of Dr. Miriam Strumia

- Second Prize CICyTAC 2014 in the area of "SCIENTIFIC-TECHNOLOGICAL DEVELOPMENTS FOR REGIONAL FOODS"

Title of the work: "Active antimicrobial containers based on Polypropylene and Glucose Oxidase immobilized on the surface". Cintia Contreras, Ricardo Toselli, Miriam Strumia.

Awarded by the Secretary of Science and Technology of the Ministry of Industry, Commerce and Technological Scientific Development of the Province of Córdoba, Fundación Banco Provincia de

Córdoba and the Technological Committee of the V International Congress on Food Science and Technology, 2014 .

-“Dr. Héctor Bertorello” Award for the best Argentine Doctoral Thesis in Polymers by Dr. Catalina Biglione.

XIII Argentine Polymer Symposium (SAP). Buenos Aires. Thesis title: Magnetic and thermosensitive nanodevices: Synthesis, studies of their physical-chemical properties and potential applications in nanomedicine. Carried out under the direction of Dr. Miriam Strumia

-Anna Peretti Award for the best scientific paper presented at the First Argentine Seed Congress. Title: Incorporation of active films inside silo bags for the conservation of corn grains. (*Zea mays*) Authors: Gigena G; Goñi M L; They win N A Martini R E; Usseglio V L; Basso A V; Zygadlo J A ; Strumia MC; Herrera JM. Thematic axis: Production of quality seeds and application of technological innovation. Congress organized by the Faculty of Agricultural Sciences, National University of Córdoba and the Association of Private Agricultural Laboratories (ALAP). 2020.

- Women in Science, Outstanding Scientific Career Award, granted by the Ministry of Science and Technology of the province of Córdoba, 2022.

## Publications

Number of chapters in books: **14**; number of papers in international refereed journals: **165**  
*h*-index :**26 (Scopus)**; Nro. of citations:**2571 (Scopus)**

### Publications for three last year:

149- Poly(N-vinylcaprolactam) Nanogels with Antiviral Behavior against HIV-1 Infection  
Micaela A. Macchione, Carlos Guerrero-Beltrán, Anabella P. Rosso, Esteban M. Euti, Marisa Martinelli, **Miriam C. Strumia\*** and Maria Ángeles Muñoz-Fernández.

*Scientific Reports*, volume 9, Article number: 5732 (2019). <https://doi.org/10-1038/s41598-019-42150-9>

150- Raman spectroscopy as a tool to evaluate oxygen effects on the response of polymer gel dosimetry.

Chacón, D., Vedelago, J., **Strumia, M.C.**, Valente, M., Mattea, F\*.

*Applied Radiation and Isotopes*, 150, 43-52 (2019). <https://doi.org/10.1016/j.apradiso.2019.05.006>

151- Physico-chemistry of a successful micro-reactor: Random coils of chitosan backbones used to synthesize size-controlled silver nanoparticles

Oscar A. Douglas-Gallardo, Carlos A. Christensen, **Miriam C. Strumia**, Manuel A. Pérez, Cesar G. Gomez\*.

*Carbohydrate Polymers*, 225, 115240, (2019). <https://doi.org/10.1016/j.carbpol.2019.115241>

152- Dual-responsive nanogels based on oligo(ethylene glycol) methacrylates and acidic comonomers.

Micaela A. Macchione, M. Florencia Sacarelli, Ana C. Racca, Catalina Biglione, Graciela M. Panzetta-Dutari and **Miriam C. Strumia\***

*Soft Matter*. 15, 9700-9709. (2019). DOI:10.1039/c9sm01180c

153- Original antifouling strategy: Polypropylene films modified with chitosan-coated silver nanoparticles

Giuliana Mosconi, María Fernanda Stragliotto, Walter Slenk, Laura E. Valenti, Carla E. Giacomelli, **Miriam C. Strumia**, Cesar G. Gomez\*

*Journal Applied Polym. Sci.* 137(10),48448 (2020). DOI: [10.1002/app.48448](https://doi.org/10.1002/app.48448)

154- Volumetric properties of carbón dioxide + acrylic acid binary in the context of supercritical precipitation polymerization.

Matias Menossi, Juan Milanesio\*, Séverine Camy, Simon Harrisson, **Miriam Strumia**, Mathias Destarac.

*The Journal Supercritical Fluids*,160, 104787, (2020). <https://doi.org/10.1016/j.supflu.2020.104787>

155- Effect of including a hydrophobic comonomer on the rheology of an acrylamide-acrylic acid based copolymer.

Roger M. Juárez Data, Facundo Mattea\*, **Miriam C. Strumia** and Juan M. Milanesio.

*Journal Applied Polym. Sci.* 137(47),49532. (2020). DOI: [10.1002/app.49532](https://doi.org/10.1002/app.49532)

156- Revealing the NIR Triggered Chemotherapy Therapeutic Window of Magnetic and Thermoresponsive Nanogels.

Catalina Biglione, Julian Bergueiro, Stefanie Wedepohl, Bastian Klemke, **Miriam C. Strumia\*** and Marcelo Calderón\*

*Nanoscale*, 12, 21635-21646, (2020), DOI: [10.1039/D0NR02953J](https://doi.org/10.1039/D0NR02953J)

157- The role of polymers in analytical medical applications. A review

Marcelo Romero, Micaela. A. Macchione, Facundo Mattea\*, **Miriam Strumia**.

*Microchemical Journal*, 159,105366. 2020, <https://doi.org/10.1016/j.microc.2020.105366>

158- Biopesticidal silo bag prepared by co-extrusion process

Herrera, J M\*; Zygadlo, J A ; **Strumia, M C** ; Peralta, E .

*Food Packaging and Shelf Life*, 28, 100645, 2021. DOI: <https://doi.org/10.1016/j.fpsl.2021.100645>

159- Polystyrene Brushes/TiO<sub>2</sub> Nanoparticles Prepared via SI-ATRP on Polypropylene and its Superhydrophobicity.

Cintia Contreras, Daniel Weibel\* and **Miriam Strumia\***.

*J. Polym. Research* (Springer), 28, 103 (2021) <https://doi.org/10.1007/s10965-021-02462-9>

160- Biobased polyester from soybean oil: Synthesis, characterization and degradation studies

Mariana Bernard, Verónica Nicolau\* and **Miriam Strumia\***

*Polyolefins Journal*. Vol. 9, No. 1, 45-60 (2022). DOI: [10.22063/POJ.2021.3019.1203](https://doi.org/10.22063/POJ.2021.3019.1203)

161- Antimicrobial modification of polypropylene films by photograft and layered double hydroxides assembly

Giuliana Mosconi, Yadira Salguero, Laura E. Valenti, Ricardo Rojas, **Miriam C. Strumia**, Cesar G. Gomez, Carla E. Giacomelli\*

*Reactive and Functional Polymers*. 178 (2022) 105349.

DOI: <https://doi.org/10.1016/j.reactfunctpolym.2022.105349>

162- The disulfide bond as a key motif for the construction of multivalent glycoclusters.  
María Emilia Cano, Walter Jara, Alejandro Cagnoni, Emmanuel Brizzio, Miriam C. Strumia, Evangelina Repetto and María Laura Uhrig\*  
*New J. Chem.*, 46, 17682-17695 (2022). DOI: <https://doi.org/10.1039/D2NJ03071C>

163- Chemical overview of gel dosimetry systems: A Comprehensive Review  
Micaela Macchione, Leidy Sofía Lechón Páez, Miriam Cristina Strumia, Mauro Valente \*, Facundo Mattea \*  
*Gels*, 8, 663-690, (2022). <https://doi.org/10.3390/gels8100663>.  
<https://www.mdpi.com/2310-2861/8/10/663>

164- Organic Chemistry in Argentina and the Genesis of SAIQO  
Special Issue: Organic Chemistry in Argentina: Research from XXIII SINAQO  
Miriam Strumia, Juan Argüello and Alejandro Fracaroli. (Guest Editors)  
*J. Org. Chem.*, 87, 13423–13426 (2022). DOI: <https://doi.org/10.1021/acs.joc.2c01958>  
*Org. Lett.*, 24, 7483–7486. (2022). DOI: <https://doi.org/10.1021/acs.orglett.2c02837>

165- Mesoporous silica and oligo (ethylene glycol) methacrylates-based dual-responsive hybrid nanogels  
Micaela A. Macchione, Dariana Aristizabal, Eva Rivero-Buceta, Pablo Botella \*, Miriam C. Strumia \*  
*Nanomaterials*, 12, 3835-3854, (2022) <https://doi.org/10.3390/nano12213835>

## Patents

-**Invention Patent** in INP1 2017010 2993, 17210915. Title: “Impregnated films with insecticide activity and development” by Herrera Jimena, Zygodlo Julio, Martini Raquel, Zunino María Paula, Pizzolitto Romina, Gañán Nicolás, Dambolena, José, Goñi María Laura, Strumia Miriam. 27/10/2017

-**Invention Patent (pending)**: “Active packaging for hermetic storage and development” Nro. 20200103046. 4/11/2020 by Herrera, Jimena María, Strumia, Miriam Cristina y Zygodlo, Julio Alberto, Peralta, Elizabeth y Soto-Valdez, Herlinda

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