

CENTRO INTERNACIONAL DE FÍSICA

PhD. Eduardo Posada
Director



Turkey, May 2012

www.cif.org.co



CIF

Mission: Promote basic and applied research, specially in physics and industrial and technological development in Colombia and the Andean and Caribbean countries.

Objectives:

- Development of basic and applied research
- Scientists training
- Industrial technological development and innovation
- Introduction of new technologies in the country
- Creation of knowledge-based industries (spin offs)

CIF TEAM - 2012

Full time scientists	30
Part time scientists	15
Administrative	5
Project coordination	4
PhD. MSc. And undergraduate students	40
TOTAL CIF	88

CIF's GROUPS

BASIC RESEARCH

- Biophysics and membranes biology
- Optics
- Materials and Nanotechnology
- Nuclear Physics - U. Nacional



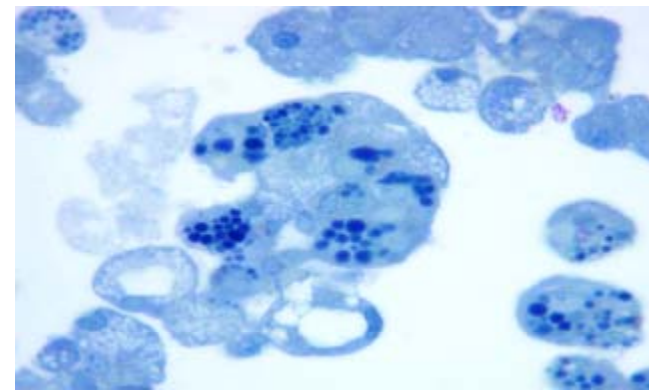
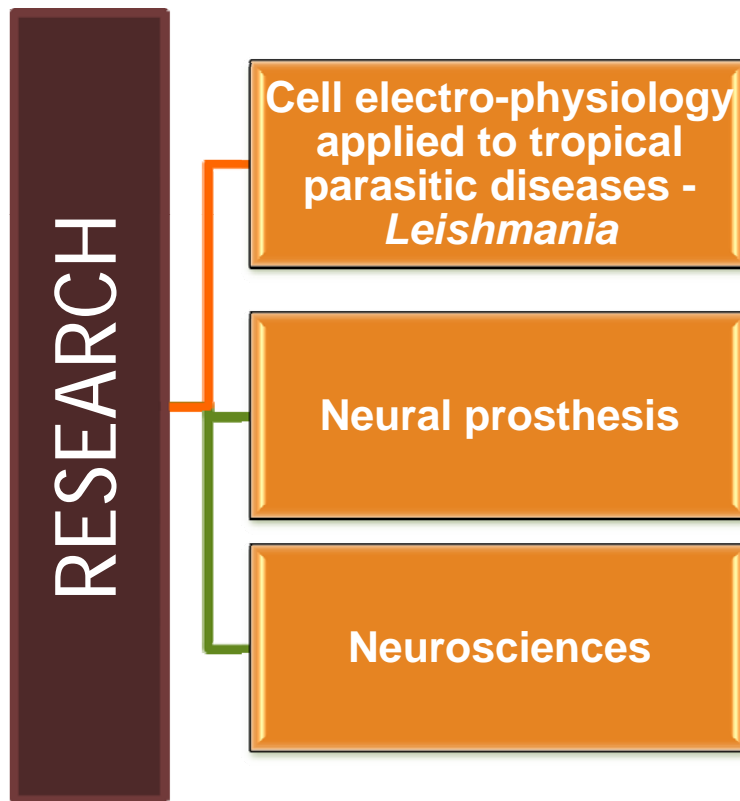
APPLIED RESEARCH AND TECHNOLOGICAL DEVELOPMENT

- Applied Physics and Tech. Development
- Biotechnology



PROJECT MANAGEMENT

BIOPHYSICS AND MEMBRANE BIOLOGY

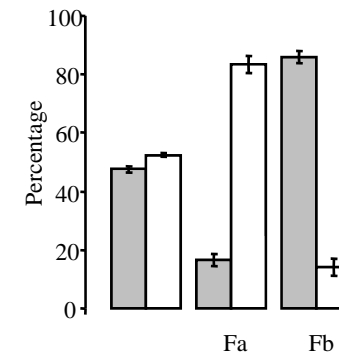
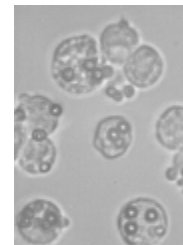
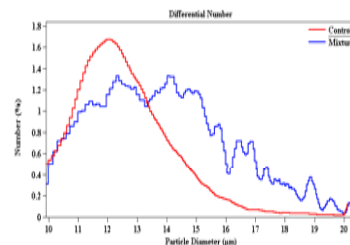
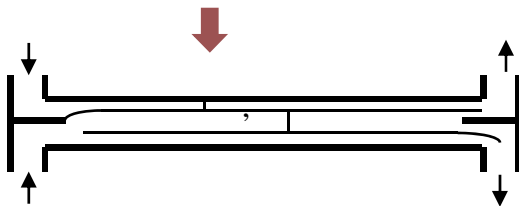
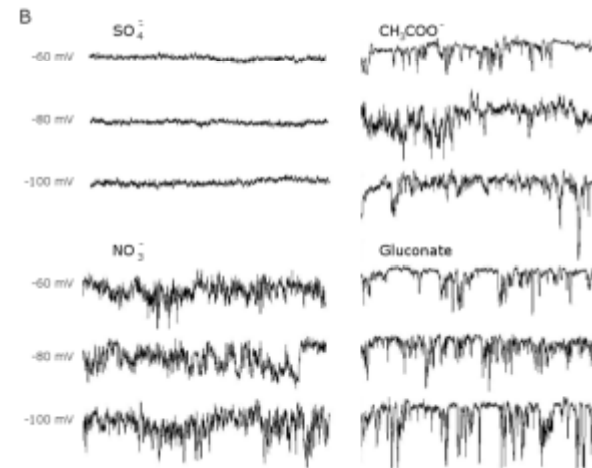


Director: PhD. Marcela Camacho

Main researchers :PhD. Clara Spinel, PhD.Enrico Nassi, PhD.Maria del Pilar Gómez

SOME RESULTS

- Theoretical Analysis of ion currents.
- Method to separate cells, intracellular organelles, etc.
- Membrane permeability in the model *Leishmania*-macrophage.
- Ion currents detected on the *Leishmania* parasitophorous vacuole.



NUCLEAR PHYSICS

Results and New Projects

- ◉ Study of the nuclear continuum at high intrinsic excitation energy and high spin.
- ◉ Detection of anti-personal mines using gamma and neutron back scattering.
- ◉ Applications of nuclear techniques for geophysics and industry.

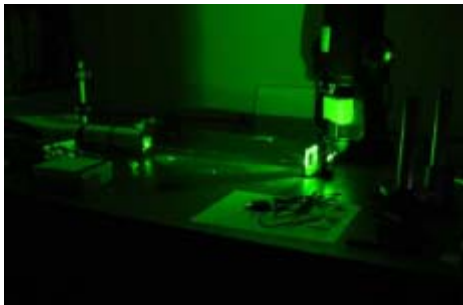


OPTICS

LIDAR: Laser
Imaging
Detection and
Ranging

Holography

Thermal
treatments



MATERIALS AND NANOTECHNOLOGY

Production of titanium
and Zirconium Nitride
thin films

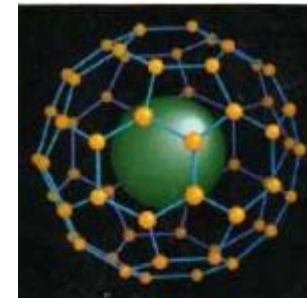
Nanotechnology

Colloids applied
to crops

ElectroSpray
coatings

Cathode Pulverization
CD y RF

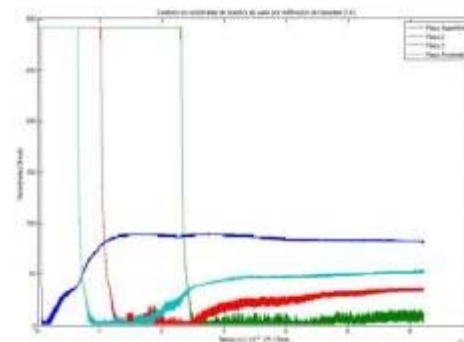
Colloids applied
to crops



RESULTS

- MEASUREMENT OF MOISTURE IN SOIL
- MONITORING OF NANOPARTICLES

- Nanotechnology applications for agricultural purposes using colloids as a support for transportation of pesticides for plant protection
- Integrated electrical measurements of soil designed to measure solute penetration and the percentage of moisture at the depth of irrigation from surface.



BIOTECHNOLOGY

Development of Productive Reforestation Models



APRM

Flexible

Replicable

Low-cost model

High social and environmental
impacts.



OPTIMIZATION OF SNAKE ANTI- VENOM SERUM PRODUCTION

**LABORATORIOS
PROBIOL S.A.**
Fundador: Dr. César Gómez Villegas
www.probiol.com



- ❑ Processes optimization,
Laboratorios Probiol S.A.
- ❑ Analysis and evaluation -
productive chain
- ❑ Enhance ophidic accident
treatment alternatives

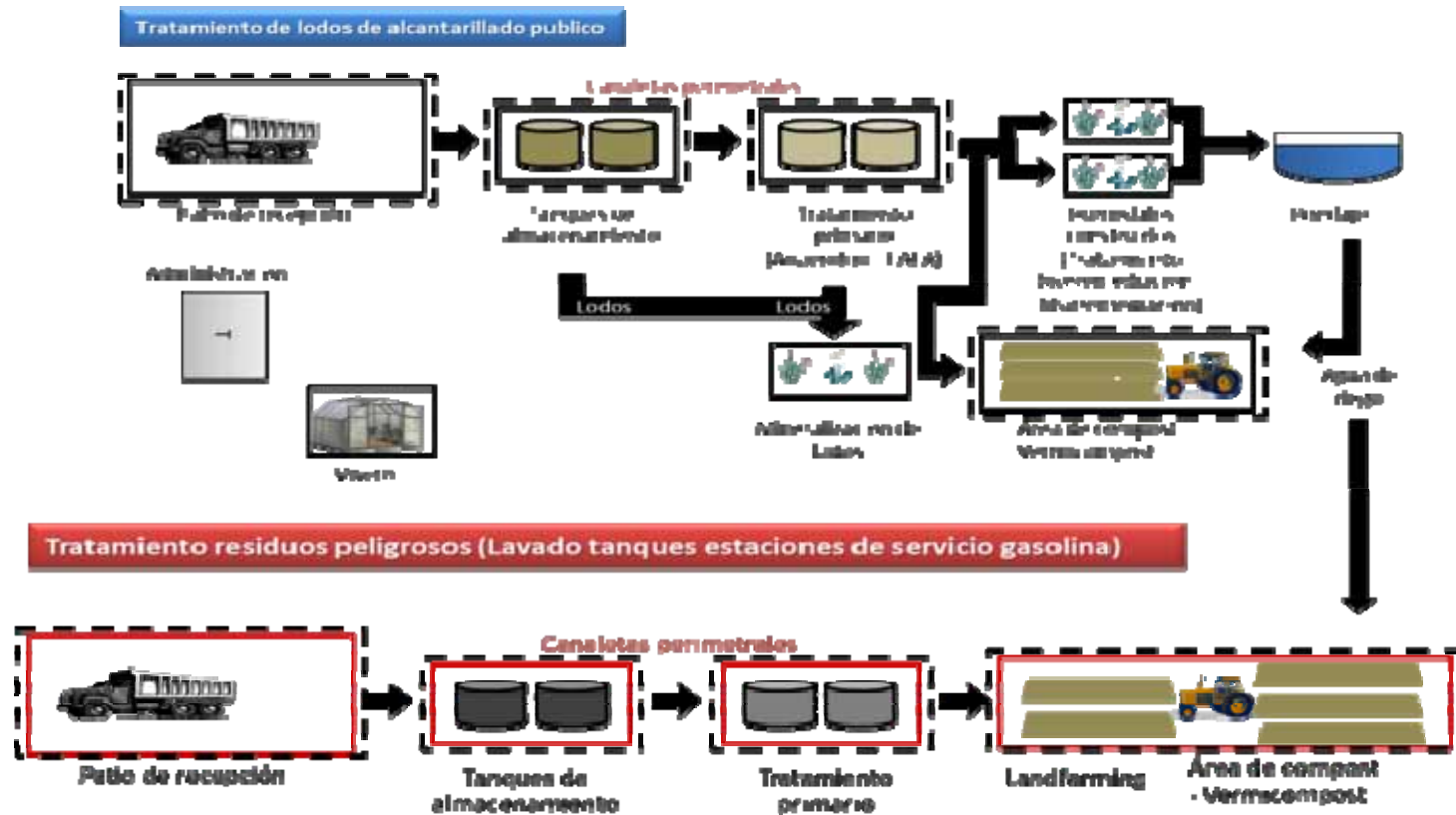


Technical support for the creation of a voluntary compensation fund and implementation of Round Table on Sustainable Palm Oil (RSPO) principles and criteria in Aceites Manuelita S.A. plantation (Casanare - Orinoco grasslands)



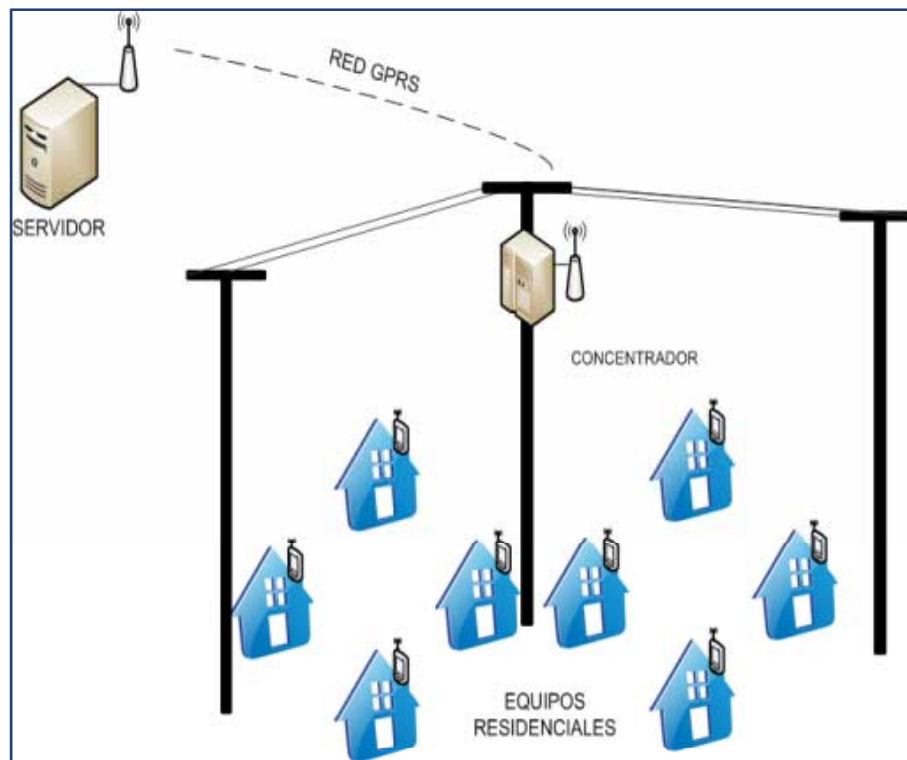
Industrial sludge management - Spin off

Bioremediation services and final disposition of sludge contaminated with hydrocarbons and oils.



APPLIED PHYSICS

AUTOMATIC REMOTE MEASUREMENT TECHNOLOGY FOR ELECTRIC POWER MEASUREMENT



TECHNOLOGY CURRENTLY USED

BAR BUS



DUAL METER

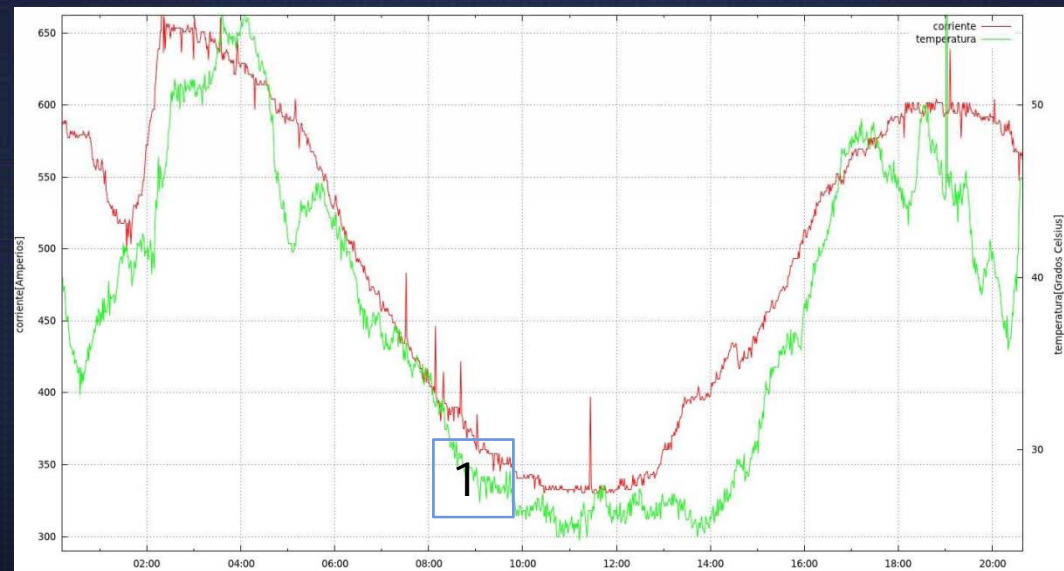
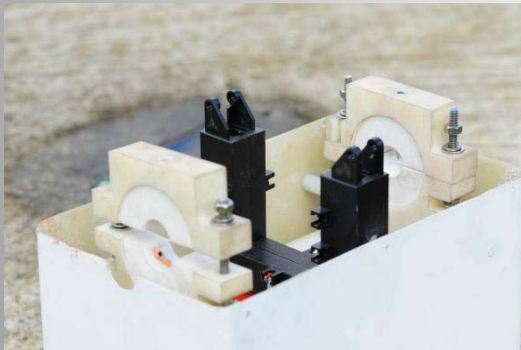
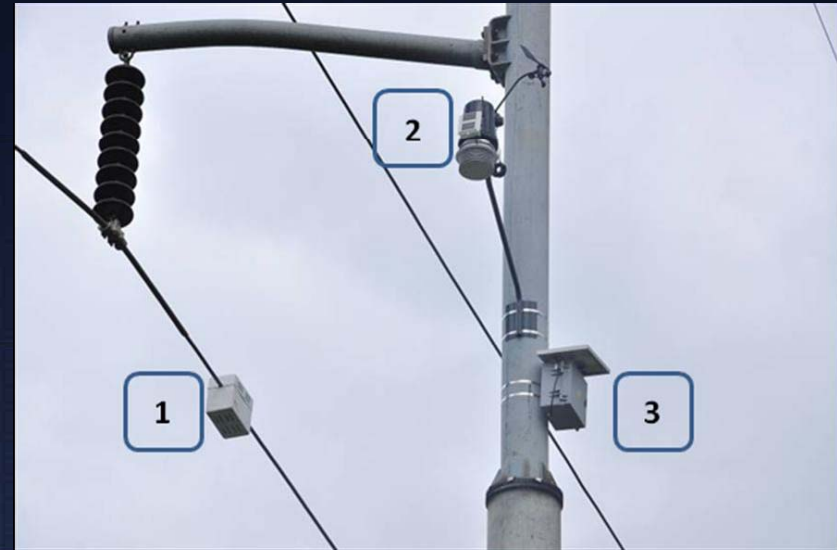


PRODUCTS

RESULTS

- ◆ Measurement and analysis equipment developed for the electrical sector (smart grids)
- ◆ More than 500 instruments produced and installed
- ◆ Technological solutions for Colombian industries
- ◆ Design of specialized electronic instrumentation and software
- ◆ Production of small series of devices
- ◆ Strengthening of the relationship with industry
- ◆ Research and development training

ONLINE MEASUREMENT OF TEMPERATURE AND CURRENT IN HIGH VOLTAGE



TECHNOLOGICAL-BASED INSTITUTIONS AND SPIN-OFFS

PROMOTED

- CIC. Corporación para la Investigación de la Corrosión - *Corrosion research corporation* -
- TECLASER. Laser precision cutting
- AIDETEC. Electronic devices production
- REXCO. Vacuum metalization

NEW PROJECTS

- Sludge management services
- Energy analysis services (consumption and quality)

TRENDS AND NEW PROJECTS

CIF has increased and strengthened its scientific and technological capabilities. This experience makes it easier to reach new fields for R+D in strategic areas for our country and the region.

Since we consider knowledge produced through R+D a key factor for development, our efforts are concentrated on the economic, environmental and social impacts derived from our activities.