



Interuniversity National Consortium  
"Chemistry for Environment"

## ***International Scientific Collaborations of INCA***

### **MAE Projects**

**INCA projects with co-sponsorship by the "Ministero degli Affari Esteri (MAE) - Direzione Generale per la Promozione e la Cooperazione Culturale"<sup>1</sup>**

The Consortium's mission is to carry out research and education in the field of chemistry for the environment, and to promote and disseminate a new approach to pollution prevention through the innovation of chemistry and chemical processes (green chemistry), both nationally and internationally.

Examples of international collaborations are with the NSF-Center for Environmentally Responsible Solvents located at the University of North Carolina at Chapel Hill for the use of innovative solvents for clean organic synthesis; and within the OECD Sustainable Chemistry Program started in 1998, where INCA has the responsibility for the recommendations on Education.

INCA is one of the reference institutions for MAE, Italian Ministry for Foreign Affairs, in the field of chemistry and the environment, and it is inserted in a number of bilateral scientific cooperation agreements. In this framework the INCA Consortium is involved in a number of activities with national and international counterparts. In particular, INCA, through the support of MAE, has ongoing collaborative scientific projects with the following nations.

**1. Argentina** The first project was a scientific and educational collaboration on "Chemistry for clean reactions and processes: Green Chemistry". It is funded jointly by INCA and MAE. The project has allowed to establish research collaborations with Argentinean counterparts, from the universities of Rio Cuarto, Cordoba, La Plata, and Buenos Aires, and to develop a joint research project on the use of new environmentally friendly reagents and solvents for chemical reactions, in place of conventional toxic ones. In particular the collaboration has developed the use of dimethylcarbonate as a safe methylating reagent, the use of new photochemical reaction conditions, the use of organized media for new reactions, and of carbon dioxide in the dense phase as an alternative to traditional organic solvents. The workshop "First Italia-Argentina Workshop on Green Chemistry" was held in Venice on September 16<sup>th</sup>-17<sup>th</sup>, 2002. A number of Argentinean researchers have spent varying periods of time in Italy to carry out research, and an Italian delegation has travelled to Argentina to expand the collaboration to other institutes. The project also allowed young Argentinean researchers to participate in the Summer School on Green Chemistry, a high level training course funded by the European Commission and organized by INCA annually in Venice. A volume with gathering the scientific results of the collaborations is currently in print.

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<sup>1</sup> Italian Ministry for Foreign Affairs – Directorate General for Promotion and Cultural Cooperation.

**1a. Framework Agreement for scientific collaboration Italy-Argentina:** On July 3<sup>rd</sup>, 2004, a Framework Agreement for scientific collaboration between INCA Consortium and the Faculty of Sciences of La Plata University (Argentina) was signed. Prof. Horacio Thomas, the director of Centro de Investigación y Desarrollo “Dr. Jorge J. Ronco”, came to Venice for the occasion. The Agreement is the follow-up of a collaboration which started last year for scientific investigations about use of heteropolyacids in selective oxidations

**2. Russia.** The INCA project with Russian institutions, in part funded in the year 2002 by MAE, aims to increase cultural and scientific exchanges between Italy and Russia on the theme of “New chemical methods for the degradation of persistent organic pollutants (POPs)”, focusing on polychlorinated ones. These collaborations started in the year 2000, through the funding from INTAS and NATO of two projects on the degradation of chlorinated pollutants, and sponsorship from MAE. During the past three years there have been numerous exchanges of researchers within these projects, which have led to many publications, and to an established network of researchers and competencies. The Russian institutions involved are Lomonosov Moscow State University and the following institutes of the Russian Academy of Sciences: Zelinsky Institute of Organic Chemistry, and Severtsov Institute of Ecology and Evolution. The research involves the development of new detoxification methods, the development of new methodologies and catalysts, and the analyses and monitoring of the pollutants. Along with the research visits, a workshop was held in Venice on May, 2002, which has led to the publication of a book containing the scientific results of the collaboration. In addition some young Russian researchers have participated in the Summer School on Green Chemistry, a high level intensive training course funded by the European Commission and annually organized by INCA in Venice.

**3. Developing countries.** INCA has an agreement with the Direzione Generale per la Promozione e la Cooperazione Culturale of MAE to promote scientific and technological cooperation with the following developing countries: Algeria, Egypt, Libya, Morocco, Tunisia (Mediterranean area), and Argentina, Brasil, Chile, Colombia, Costa Rica, Ecuador, Guatemala, Peru (Latin America). Within this agreement INCA manages two projects.

**3a. Mediterranean area.** INCA promotes the exchange of researchers, and the training of young scientists, in the field of analyses and decontamination of pollutants. A new laboratory, with trained local personnel, dedicated to the determination of the pollutants in the Suez Canal area, is being set up through this collaboration. Training was carried out in Italy, at the INCA POPs (Micropollutants) Analyses laboratory. The annual INCA Meeting was held in Tunis in June 2002, expanding it to participants from the countries of the Mediterranean basin, allowing to establish new collaborations, and to discuss common research interests. The meeting “Technologies and processes for the reduction of the environmental impact of industrial and agro-foodstuff industries” was held in Viterbo, in November 2002, with the participation of scientists from the Mediterranean basin. Also, the Italian-North African Workshop on Sustainable Chemistry was held in Rome, under the auspices of INCA, on October 5<sup>th</sup>, 2002, eight Italian researchers visited countries of the Mediterranean basin to establish collaborations (see also “Publications & Dissemination” section of the CD).

**3b. Latin America.** INCA is responsible for new collaborative programs in the field of research and training towards the use of natural feedstocks for the development of new products of fine chemistry. This project has allowed meetings in Italy with a number of researchers from Chile, Argentina, Brazil, Algeria, Egypt, Tunisia, Uruguay, Costa Rica, and Venezuela. Concurrently, INCA has coordinated an editorial effort that has led to the publication of a volume on Green Chemistry in Africa (see also "Publications & Dissemination" section of the CD). INCA representatives were also actively involved in the Johannesburg Summit on Sustainable Development.