POINT OF VIEW

From Isolated Projects to Strategic Research Alliances: A Path for Ibero-American Analytical Chemistry

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Beyond its own scientific challenges, Analytical Chemistry must contribute to addressing increasingly complex societal problems, particularly those related to environmental protection, food safety, human health, and sustainability. Addressing these problems requires not only advances in analytical technologies but also more effective ways of organizing scientific research and connecting it with societal needs. In this context, international collaboration is particularly important in regions where scientific capabilities and resources are unequally distributed.

In a recent *Point of View*, Zanella highlighted the progress of Ibero-American Analytical Chemistry while recognizing persistent challenges, including unstable funding, unequal access to advanced instrumentation, and difficulties in maintaining scientific infrastructure.[1] These limitations are particularly relevant in Latin America, where substantial scientific expertise exists but is concentrated in certain countries and institutions. In addition, investment in research and development varies considerably across Ibero-American countries, many of which face significant financial constraints. Under these conditions, scientific collaboration offers an opportunity to make better use of limited resources by combining complementary capabilities rather than duplicating them. Building on this perspective, I believe that the next challenge is not only to expand scientific collaboration, but also to establish institutional mechanisms that can sustain it over time.

Ibero-America already has a valuable tradition of scientific collaboration. The Ibero-American Network of Analytical Chemistry (RIAQA), established in the early 2000s, promoted the first Ibero-American Congress of Analytical Chemistry (CIAQA), held in Niterói, Brazil, in 2005. Although RIAQA became less active over time, Brazil has maintained the continuity of CIAQA through its association with the Brazilian National Meeting on Analytical Chemistry (ENQA). This commitment deserves recognition. However, revitalizing RIAQA will require greater participation and commitment from the broader Ibero-American scientific community.

Another important experience is the Latin American Network for Environmental Quality Analysis (RACAL) and its Latin American Symposium on Environmental and Analytical Chemistry (LASEAC), which have contributed to scientific exchange and regional cooperation.[1] These initiatives have provided opportunities for researchers from different countries to establish scientific relationships and develop collaborative projects. Through my participation in these networks and in the organization of some of their scientific meetings, I have observed how informal discussions at conferences can develop into long-standing research collaborations. This has been my own experience with research groups from Brazil, Colombia, and Spain, with whom I have collaborated for several years in different areas of Analytical Chemistry, particularly sample preparation, combining expertise that would have been difficult to bring together within a single institution.[2-5] These experiences, however, raise an important question: how can we move beyond collaborations that depend mainly on individual researchers?

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I believe that the next step is to strengthen existing collaborations through more structured strategic research alliances. I use this term to describe cooperation among researchers, universities, research institutions, and industry, based on shared scientific objectives, complementary capabilities, and explicit institutional commitments. These alliances would facilitate access to shared research infrastructure, promote coordinated graduate training, and contribute to broader societal challenges. Their development would be progressive, supported by successive collaborative projects and funding opportunities. Importantly, this approach does not require replacing individual collaborations or necessarily creating new organizations. Rather, it involves providing successful partnerships with stronger institutional support. In this context, RIAQA and RACAL could explore closer coordination and joint initiatives while preserving the identities of CIAQA and LASEAC.

These alliances should focus on scientific challenges that benefit from collective efforts. Environmental contamination, water security, food safety, emerging pollutants, and green analytical technologies are examples of areas where multilateral projects could bring together universities, research institutions, and industrial partners. Shared analytical facilities and harmonized methodologies could improve research capabilities and generate reliable analytical information to support public policies and address societal needs.

A key element in strengthening these alliances is collaborative doctoral training. The evolving mission of universities requires research, graduate education, and internationalization to be closely connected rather than developed as separate activities. In this context, I propose exploring the establishment of an Ibero-American Doctoral Training Network in Analytical Chemistry, connecting existing graduate programs through joint thesis supervision, academic mobility, shared advanced courses, and access to specialized laboratories. However, achieving this goal would require universities to adopt more flexible institutional procedures and doctoral curricula, particularly regarding academic mobility, course recognition, and joint thesis supervision. Excessive bureaucracy and rigid academic structures can discourage participation and weaken the commitment needed to sustain collaborative initiatives. Involving doctoral students in international research activities from the early stages of their careers could help establish scientific relationships that continue beyond individual projects and contribute to the formation of new generations of researchers.

The Erasmus+ NANOMER project[6] provides a relevant example of structured cooperation among European and Latin American universities, combining advanced training, international mobility, and complementary scientific expertise. A similar initiative in Analytical Chemistry could begin with a limited number of committed institutions and gradually expand through successive funding opportunities, including Erasmus+ and CYTED programs (among others). Initially, the objective would not be to create a new doctoral degree, but to strengthen cooperation among existing programs and progressively establish a common framework for research and doctoral training.

The Ibero-American Analytical Chemistry community has already demonstrated its capacity to collaborate. The challenge now is to strengthen these experiences through institutional commitments, shared scientific objectives, and the participation of new generations of researchers. The future of Ibero-American Analytical Chemistry may depend less on creating new networks than on strengthening and connecting those we already have, transforming successful individual collaborations into enduring strategic research alliances.

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