

Flow Analysis<sup>1</sup>

Flow analysis can be acknowledged as a Brazilian triumph. In fact, the “tupiniquim”<sup>2</sup> contributions to the development of this technique have been outstanding, especially after the inception of flow injection analysis and the related techniques. In this context, the pioneer application of flow injection systems to large-scale analyses of waters and plants at CENA/USP<sup>3,4</sup> and the relevant conceptual, methodological and applicative achievements in different Brazilian institutions<sup>5</sup> can be highlighted. These aspects were recognized when the Journal of the Brazilian Chemical Society was launched: the flow analysts at CENA/USP were invited to collaborate with a scientific article in its first issue.<sup>6</sup> As a Brazilian, this makes me particularly proud.

The expressive number of available flow-based analytical methods, scientific articles and monographs, academic disciplines, workshops and commercially available flow analysers demonstrates that flow analysis reached maturity.

Further development of such technique should be synergistic and not divergent. To this end, concerns for the following aspects should be borne in mind:

- unification of concepts and terminology aiming at the convergence of ideas, improved dissemination, pedagogic aspects, etc. A specific issue refers to the representation of flow diagrams, which should follow an international format as it happens with *e.g.* electric circuits and hydraulic systems;
- assortment of analytical techniques considered within the broad term “flow analysis”, as well as distinctions between the classical flow analysis and the  $\mu$ -TAS.<sup>7</sup> Moreover, deeper discussions on the interactions of the flow analysis with other techniques would be required;
- reduction of the number of manifold modalities. The present tendency towards a myriad of modalities, each one assigned by an acronym,<sup>8</sup> is not sustainable. The conceptual differences between some modalities are often too small to justify a specific modality name. This policy constitutes itself as a negative factor for the scientific interactions between different research groups. In this sense, multi-commutation is not a modality, but a tool to increase versatility and complexity of the flow manifold. A didactic

classification of the flow analysers could perhaps rely solely on flow pattern;

- dissemination of novel achievements. To this end, the organization of national and international symposia, the combination of existing databases and homepages, the revision of the of flow analysis progress and the signalization of paradigm shifts are of utmost relevance;
- strengthening of the connections with the instrument manufacturers. This would be essential for reducing the gap between the university and the enterprise, which presently impairs the prompt commercial availability of the proposed innovations.

The above-mentioned aspects could be more efficiently dealt with if web facilities were exploited, thus getting a permanent forum for discussions. In this regard, support from the *Sociedade Brasileira de Química* (Brazilian Chemical Society) and the organization of a virtual institute for flow analysis would be welcome.

The SBQ role in the further development of flow analysis could then be to steer the involved people and organizations towards the improved synergy. A Brazilian Society involved in a theme with a Brazilian flavour...

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## References and Notes

- Editor's note: This is the first of a series of editorials about the state of the art of several hot areas in chemistry. We are thankful to all invited contributors and we will gladly receive suggestions and comments.
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