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Flow injection analysis: An approach via linear none equilibrium thermodynamics

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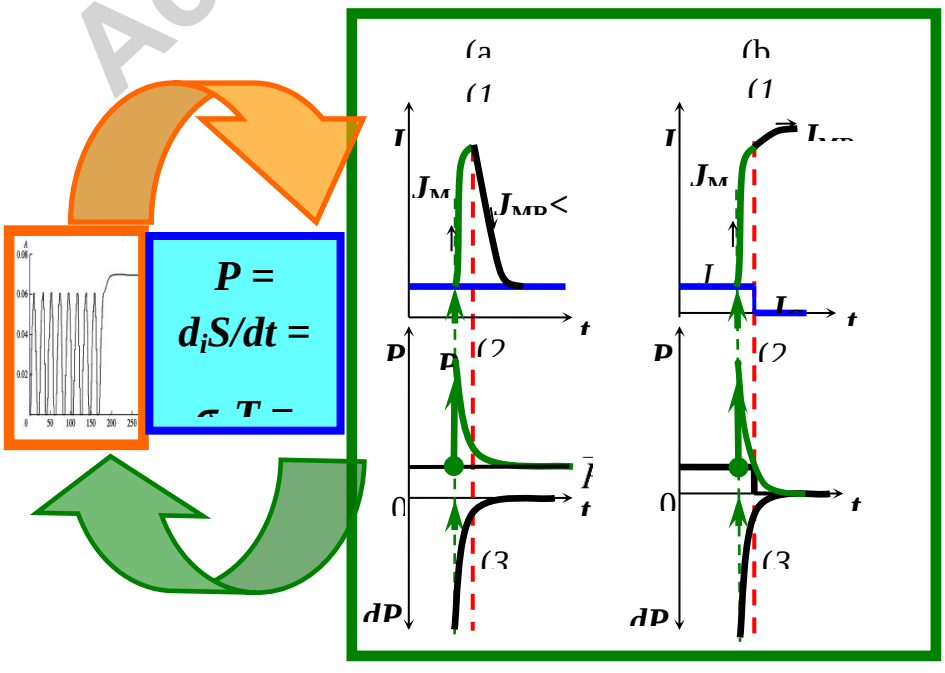
ABSTRACT

A novel approach to flow injection analysis (FIA) was proposed based on the main principles of linear non-equilibrium thermodynamics (LNET). The basic principles of I. Prigogine theory for dissipative structures, internal entropy production rates, thermodynamic forces and fluxes arising in flow systems were shown to be applicable to FIA. The practical application of this novel FIA approach allowed the use of the extent of analytical reaction and the entropy production rates for flow system optimization, and in-depth understanding of the steady state. The FIA approach was also found to be a suitable technique for and characterizes its quality, explaining the peculiarities of short-term and long-term steady states in a FIA system and their role for reproducibility of practical measurements. The practical application o the FIA approach was found to support its theoretical principles and allow formulating an original manner to derive a basic equation in FIA theory.

Graphical abstract



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