

## 20<sup>th</sup> Century's Flow Injection Analysis in China

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Flow injection analysis (FIA) has been developing very fast since its invention at the year 1975 by Ruzick and Hansen. China has contributed much to the development of FIA. Since the first paper concerned with the term of Flow Injection Analysis was published at 1979, FIA has become an important part of analytical chemistry in China. Many Chinese scientists have engaged in the research work in this field during the last twenty years.

Based on the data from CA and the regular review of FIA published biennially in a Chinese journal of analytical chemistry, Fenxi Shiyanshi (Analytical Laboratory), a brief description of 20<sup>th</sup> century's FIA in China will be given in this paper.

1. The national conferences of FIA have been held biennially or triennially (Table 1). The number of the presentations in the conference increased successively.
2. The number of the publications in Chinese and other periodicals concerning the theory, apparatus and application of FIA increases fast even if it was slow in the early stage. The growth curve of the publications of Chinese scientists was shown in Fig.1 together with the world publications. The presentations in the conferences were not included. The number of the publications increased from 5% in 1987 to 20% in 1997 of the world publications in the same period (Fig.2).

Table 1. National conferences of FIA in China

	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	6 <sup>th</sup>
year	1987	1989	1991	1993	1996	1999
place	Shengyang	Shengyang	Beijing	Wuhan	Qingdao	Xi'an
Number of the papers	53	75	89	125	91	57

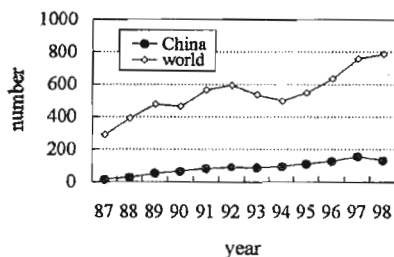


Fig. 1 Annual number of FIA publications by Chinese scientist:

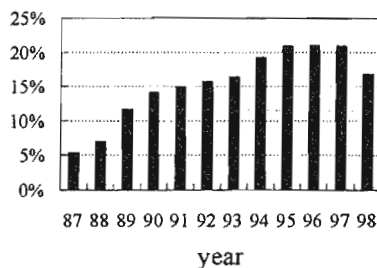


Fig.2 The percentage in the world publications by Chinese scientists

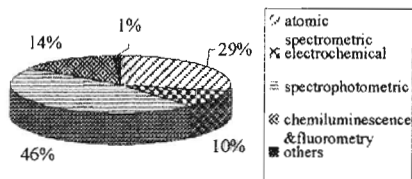


Fig.3 Distribution of detector system used in FIA in China

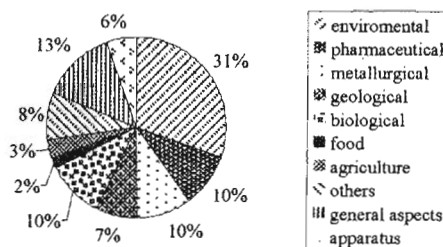


Fig. 4 The distribution of the application field of the FIA publication in China

3. The detection system most often used in FIA by Chinese scientists is still the spectrophotometry followed by atomic spectrometry (Fig. 3). The use of chemiluminescence detector during these years has increased compared with the first decade of FIA in China. On the contrary, the use of electrochemical detector decreased.
4. The publications relate with the general aspects, instrument and apparatus, and applications in the fields such as metallurgical, geological, pharmaceutical, biological, environmental, etc. Nearly one third of the publications are concerned with environmental samples. The application in the determination of pharmaceutical and biological samples increase from 7% in the first decade to 20% in the second.
5. What is new and what needs to be improved.
  - (1). Even if a great deal of creative work has been published, there are still some papers restricted in transplanting the existing batch method to FIA apparatus. There is further work to be done in the theoretical study and new reaction system.
  - (2). The development of cheap, accurate and

computerized FIA equipment and the standard methods are necessary to the practical application of FIA.

(3). In recent years micro-FIA/and FIA on a microchip interests the scientists in the world and also in China. An international co-operation project between China and Japan dealing with the use of microchip in environmental monitoring is undertaken.

(4). An attempt at combining flow injection (used for the sample injection and pretreatment) with capillary electrophoresis (CE) is worth to be developed.

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