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**Datasheet for the decision  
of 27 November 2007**

**Case Number:** T 0823/05 - 3.4.02

**Application Number:** 99936208.0

**Publication Number:** 1102984

**IPC:** G01N 27/64

**Language of the proceedings:** EN

**Title of invention:**

Method for separation of isomers and different conformations  
of ions in gaseous phase

**Applicant:**

NATIONAL RESEARCH COUNCIL OF CANADA

**Opponent:**

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**Headword:**

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**Relevant legal provisions:**

EPC Art. 56

**Keyword:**

"Inventive step - no (confirmed)"

**Decisions cited:**

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**Catchword:**

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Case Number: T 0823/05 - 3.4.02

**D E C I S I O N**  
of the Technical Board of Appeal 3.4.02  
of 27 November 2007

**Appellant:** NATIONAL RESEARCH COUNCIL OF CANADA  
1500 Montreal Road  
Ottawa, Ontario K1A 0R6 (CA)

**Representative:** Frei, Alexandra Sarah  
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**Decision under appeal:** Decision of the Examining Division of the  
European Patent Office posted 23 December 2004  
refusing European application No. 99936208.0  
pursuant to Article 97(1) EPC.

**Composition of the Board:**

**Chairman:** A. Klein  
**Members:** M. Rayner  
M. Vogel

## Summary of Facts and Submissions

I. The applicant has appealed against the decision of the examining division refusing European patent application number 99 936 208.0 (International Publication Number WO 0008454) relating to separating isomers or conformers, date of filing 05.08.1999, priority dates 05.08.98, 29.01.99 and 28.05.99. In the examination and/or appeal proceedings, reference has been made to documents including the following:

- D5 HUDGINS R R ET AL: "High resolution ion mobility measurements for gas phase proteins: correlation between solution phase and gas phase conformations" INTERNATIONAL JOURNAL OF MASS SPECTROMETRY AND ION PROCESSES,NL,ELSEVIER SCIENTIFIC PUBLISHING CO. AMSTERDAM, vol. 165-166, page 497-507, XPO041 03206 ISSN: 01 68-1176
- D6 GUEVREMONT R ET AL: "High field asymmetric waveform ion mobility spectrometry-mass spectrometry: an investigation of leucine enkephalin ions produced by electrospray ionization" JOURNAL OF THE AMERICAN SOCIETY FOR MASS SPECTROMETRY,US,ELSEVIER SCIENCE INC, NEW YORK, NY, vol. 10, no.6, page 492-501, XPO04173039 ISSN: 1044- 0305, June 1999

II. According to the decision under appeal, the following was included in the reasons for refusal of the application:

- (a) The priority claim for independent claim 1 to separating isomers was not valid.

- (b) The subject matter of claim 1, by reference to isomers, is novel in the light of the available prior art.
- (c) The problem solved by the novel subject matter is providing a new possibility for applying high Field Asymmetric waveform Ion Mobility Spectroscopy (FAIMS). The skilled person would certainly consider applications already known in the closely related field of Ion Mobility Spectroscopy (IMS). The subject matter of claim 1 cannot therefore be considered to involve an inventive step in the light of, for instance a known FAIMS method, as in document D6, taken with an IMS method, for instance, as known from document D5 applied to isomers.

III. The appellant requests that the decision under appeal be set aside and that a patent be granted on the basis of a set of claims filed with the statement of grounds, in which set independent claims 1 and 11 are unchanged from those presented to the examining division. Oral proceedings were requested on an auxiliary basis.

IV. In support of its case, the appellant advanced the following submissions:

- (a) The appellant declared that it agreed with the findings of the examining division in relation to priority.
- (b) The appellant declared that it also agreed with the findings of the examining division in relation to novelty.

- (c) Starting from document D6, the skilled person would maybe see in D5 that IMS, which measures a completely different quantity not related in the same way to the outermost electron configuration, would be suitable for separating isomers, which fact would at most teach that another separation method for these substances might not be an urgent requirement. It is not a matter of just trying another method for a different substance. It took the inventors months and years of systematic work to carry out experiments leading to the invention.
- (d) A mere hope to succeed when it may seem obvious to try does not suffice as a motivation to render claimed subject matter obvious. It took the inventors months and years to carry out the experimental work involved. The subject matter of the claims is therefore inventive contrary to the position of the examining division.

V. Consequent to the request of the appellant the board issued a summons to oral proceedings. In a communication attached to the summons, the board indicated its provisional opinion by expressing its doubts about the chances of success for the appeal on the basis of the claims presented. The board drew attention to matters including the following:

- (a) No discussion seemed necessary on priority.
- (b) Statements such as "The FAIM device ... is most closely related to conventional IMS" at the beginning of the last paragraph on the first page of document D6 indicated that the examining

division is not wrong to consider that the skilled person would consider FAIMS and IMS in relation to experimentation with isomers. In other words the approach of the examining division relating to a combination of teachings seems more persuasive than that of the appellant.

- (c) On the question of "the mere hope to succeed", the board is short of any evidence at all that the skilled person would have expected the known FAIMS method not to work for structural isomers, just as it did in the cases discussed in D6. While not decrying in any way the work carried out in the present case, it thus seems that the skilled person would have had not just a "hope", but rather more an expectation of succeeding.

VI. Following the communication of the board, the appellant withdrew its request for oral proceedings, without commenting on the doubts expressed by the board.

VII. Independent claim 1 upon the basis of which grant of a patent is requested is worded as follows:

"1. A method for separating isomers from a mixture, comprising the steps of:

- a) providing an analyzer region (5, 14, 34) defined by a space between at least first and second spaced apart electrodes (2,4, 12,13, 32,33,35), said analyzer region being in communication with at least one each of a gas inlet, a gas outlet, an ion inlet and an ion outlet, and introducing ions from at least one ionization source into said analyzer region through said ion inlet;
- b) applying an asymmetric waveform voltage (V(t)) and a

direct current  
compensation voltage to at least one of said electrodes;  
c) setting said asymmetric waveform voltage;  
d) varying said direct current compensation voltage and  
measuring resulting transmitted ions at said ion outlet,  
so as to produce a compensation voltage scan for said  
transmitted ions;  
e) providing at least one ionization source (15) for  
producing ions including two different isomers having  
identical molecular formula for introduction into said  
analyzer region; and,  
f) identifying at least one peak in said compensation  
voltage scan corresponding to only one of said two  
isomers."

The wording of a further independent claim, claim 11,  
is, in the light of the content of section 4 of the  
Reasons below, not given.

## **Reasons for the Decision**

1. The appeal is admissible.
2. Since the appellant agreed with the examining division about priority and novelty, it is undisputed that the subject matter of claim 1, other than that a known FAIMS method is used specifically for identifying "isomers" {reference in first line, in feature (e) and feature (f) of claim 1} is known from document D6. The timeline of document D6, where FAIMS is a development moving on from IMS, means that the skilled person understands that the starting point for further development is the former.

3. The problem to be solved is then, as stated by the examining division, that of finding a further application of the FAIMS method. The board accepts the position of the appellant, that FAIMS and conventional IMS are different methods, indeed document D6 explains that they are related yet different (second paragraph, left column, page 493). However, the board does not accept that disclosure of IMS for separating isomers teaches the skilled person there is no requirement for further development. On the contrary, the function of both methods is known and, in claim 1, there is no special structural method step specific to isomers having identical molecular formula. Therefore, since separating structural isomers is known for IMS (see, for example the third from last line of the penultimate paragraph of the left hand column on page 498 of document D5 in the passage referred to by the examining division), and document D6, as pointed out in the communication of the board, refers to "The FAIM device ... is most closely related to conventional IMS", the board cannot but consider that, in an obvious way, the skilled person would expect to solve the problem by applying FAIMS where IMS has application, in particular, in view of mass charge ratio ( $m/z$ ), to separating structural isomers. In doing so, and without decrying in any way the technical work carried out by the persons named as inventors in the present case, the board sees no and has been presented with no persuasive reason to think that the skilled person would not have expected to succeed. Accordingly, the subject matter of claim 1 cannot be considered to involve an inventive step. Therefore, the subject matter of claim 1 cannot



be considered to satisfy Article 56 EPC and the appeal fails.

4. The board does not consider it necessary to explore any other claims or other matters addressed in its communication to the appellant. The reasons for this are that, firstly, the appellant chose neither to attend oral proceedings nor itself to take a written position on these matters, and that, secondly, the board does not consider it appropriate, in a decision finally terminating the proceedings in the European Patent Office, to inflate the decision with material not necessary for refusing the request, but which could have an unpredictable effect in other jurisdictions.

## **Order**

### **For these reasons it is decided that:**

The appeal is dismissed.

The Registrar

The Chairman

M. Kiehl

A. G. Klein