Datasheet for the decision of 3 August 2012

Case Number: T 0916/09 - 3.3.01
Application Number: 00310632.5
Publication Number: 1108760
IPC: C09D 133/06, C09D 11/10
Language of the proceedings: EN

Title of invention: Polymeric binder
Patentee: ROHM AND HAAS COMPANY
Opponent: Celanese Emulsions GmbH
Headword: Ink jet ink binder/ROHM AND HAAS

Relevant legal provisions:
EPC Art. 84, 100(a)(b), 123(2)
EPC R. 124(1)

Keyword:
"Main request: novelty (no)"
"First auxiliary request: novelty (no) - amendments in the description cannot establish novelty"
"Second auxiliary request: novelty and inventive step (yes)"
"Incorporation of a statement of the respondent/patentee into the minutes (no) - not relevant for the decision"

Decisions cited:
T 0881/01, T 0593/09, T 0608/07, T 0482/92, T 0212/97, T 0263/05
Catchword: -
Case Number: T 0916/09 - 3.3.01

DECISION of the Technical Board of Appeal 3.3.01 of 3 August 2012

Appellant: Celanese Emulsions GmbH
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Decision under appeal: Decision of the Opposition Division of the European Patent Office posted 12 February 2009 rejecting the opposition filed against European patent No. 1108760 pursuant to Article 101(2) EPC.

Composition of the Board:
Chairman: P. Ranguis
Members: C. M. Radke
C.-P. Brandt
Summary of Facts and Submissions

I. The opponent appealed against the decision of the opposition division rejecting the opposition against European patent No. 1 108 760.

II. The opponent sought revocation of the patent in its entirety based on grounds under Article 100(a) (lack of novelty and inventive step) and 100(b) EPC.

III. The decision under appeal was based on the claims of the main request and those of the auxiliary request.

The claims of the main request were claims 1 to 8 as granted. Claim 1 of this request reads as follows:

"1. A polymeric binder comprising a polymer having a glass transition temperature in the range from -20°C to 25°C, an average particle diameter in the range from 250 to 400 nm, a particle size distribution such that the particles have a diameter in the range from 130 to 450 nm, and an acid component present in a range from 1 to 10 wt.% of the polymer."

IV. The following documents were cited during the opposition proceedings:

(D1) US-A-4 948 822
(D2) US-A-5 874 498
(D3) EP-A-0 671 420
(D5) Declaration of Michael P. Hallden-Abberton of 1 July 2003, 8 pages
V. In particular, the opposition division decided that
- no grounds under Article 100(b) EPC prejudiced the maintenance of the patent;
- the subject-matter of the claims was novel as
  - document (D1) did not disclose a particle size distribution and (D3) only gave very broad ranges for such a distribution, and
  - multiple selections from the disclosure of document (D2) would be required to come to the subject-matter of the present claims;
- document (D4) represented the closest prior art.
The problem posed was to provide an ink jet ink binder which did not clog the printer head and which imparted wet-rub, dry smear, rub and highlighter resistance to a printer ink.
Document (D4) did not address this problem, nor did it hint at the solution. The other cited documents did not mention ink jet applications.
That the problem was indeed solved was shown by the comparative tests (D5) and (D6).

VI. The additional documents cited during the appeal proceedings included the following:

(D7) DE-A-198 12 143
(D9) Collins Wordpower Good Grammar, HarperCollins Publishers, Glasgow/GB 2000, 166
VII. The present decision is based on the following sets of claims:
- claims 1 to 8 as granted (main request);
- claims 1 to 8 as granted with an amended page 4 of the description (first auxiliary request);
- claims 1 to 8 of the second auxiliary request;
- claims 1 to 8 of the third auxiliary request;
where the claims of the second and third auxiliary requests and the amended page 4 of the description of the first auxiliary request were filed under cover of the letter dated 18 May 2012.

(a) Claim 1 of the main request and of the first auxiliary request is set out in point III above.

(b) Claim 1 of the second auxiliary request reads as follows (where the amendments with respect to claim 1 of the main request are shown in bold):

"1. A polymeric binder comprising a polymer having a glass transition temperature in the range from -20°C to 25°C, an average particle diameter in the range from 250 to 400 nm as determined by capillary hydrodynamic fractionation, a particle size distribution such that the particles have a
diameter in the range from 130 to 450 nm as determined by capillary hydrodynamic fractionation, and an acid component present in a range from 1 to 10 wt.% of the polymer."

(c) The claims of the third auxiliary request were restricted to the use of the polymers as binders in inks.

VIII. The arguments of the appellant as far as relevant to the present decision may be summarised as follows:

The "acid component" mentioned in claim 1 could be any external acidic component and did not have to be copolymerised with the polymer. There was no information in the patent in suit as to how to implement a binder for an ink jet ink without acidic monomers. Furthermore, the patent in suit did not specify how the average particle size was to be determined. As different methods yield different values, the person skilled in the art did not know if he was working within the ranges indicated in the present claims.

The subject-matter of the claims was not novel in view of document (D2) and in view of example 2 of documents (D7) and (D13), as was apparent from the experimental reports (D14) and (D15).

Document (D2) or (D4) was the closest prior art. The problem to be solved was to provide alternative polymeric binders that could be used in paints, especially in ink jet formulations. The subject-matter
of the claims was obvious in view of (D2) or (D4) alone or in combination.

The appellant considered the amendments in the claims of the second auxiliary request to contravene the requirements of Article 123(2) EPC. These claims were not clear as they did not indicate whether the average value referred to therein was a weight or a number average.

IX. The respondent was of the opinion that claim 1 of each request was clearly directed to a binder comprising a polymer containing acid moieties, due to the fact that the word "and" was missing between "400 nm" and "a particle size" in said claim 1.

Document (D2) was not relevant for novelty as it did not indicate a quantitative particle size distribution and did not require an acid to be present. Example 3 of (D2) was obscure. Document (D2) was concerned with paints, i.e. a different field. Therefore, the person skilled in the art would not have considered document (D2).

Document (D4) did not disclose the acid content of the resin, an average particle size, and a particle size distribution as specified in present claim 1.

Example 2 of document (D7) did not sufficiently disclose the polymerisation conditions (such as the mixing and shearing conditions). Hence, the parameters determined by the appellant when repeating this example were not disclosed therein.
The problem to be solved was as outlined in paragraph [0014] of the patent in suit.

No combination of the cited documents suggested the subject-matter of the claims of the patent in suit.

X. In a communication annexed to the summons to oral proceedings, the Board gave reasons for its preliminary and non-binding view that

- grounds under Article 100(b) EPC did not prejudice the maintenance of the patent; and that
- document (D4) was to be considered as the closest prior art when assessing inventive step.

XI. The appellant requested that the decision under appeal be set aside and that the patent be revoked.

The respondent requested that the appeal be dismissed or that the patent be maintained on the basis of any one of the first, second or third auxiliary requests filed under cover of the letter dated 18 May 2012.

XII. At the end of the oral proceedings the chairman announced the decision of the Board.
Reasons for the Decision

1. The appeal is admissible.

2. Main Request

2.1 It was under dispute whether or not the subject-matter of the claims was novel in view of document (D7), taking into account the experimental data provided in document (D14).

2.2 Example 2 of document (D7) discloses a polymer emulsion made from a monomer mixture consisting of
11 parts by weight of methacrylic acid, 5.5 parts by weight of acrylic acid, 572 parts by weight of methyl methacrylate, and 528 parts by weight of butyl acrylate.

Therefore, the acid components are present in the polymer in about 1 650/(11+5.5+572+528) = 1.5 weight percent.

However, document (D7) does not indicate whether the polymer obtained in example 2 has the following properties specified in claim 1 of the patent in suit:
- a glass transition temperature in the range from -20 °C to 25 °C,
- an average particle diameter in the range from 250 to 400 nm, and
- a particle size distribution such that the particles have a diameter in the range from 130 to 450 nm.
According to the experimental report (D14), the appellant repeated example 2 of document using different stirring speeds and different temperatures of addition of the monomer seed emulsion (see paragraphs 1.1.2 and 1.1.3 on page 1).

In all four runs, the values of the glass transition temperature and the particle size distribution were within the ranges indicated in claim 1 of the patent in suit (see table 1 on page 3 and figure 2 on page 7).

The weight average particle sizes as determined by means of the Mastersizer particle analyser (MAS) using the multimodal model were 255, 247, 256 and 270 nm for these runs (see table 3 on page 7).

2.3 The respondent argued that example 2 of document (D7) was not disclosed in such detail that the parameters measured by the appellant were inherent (see under point IX above). The only specific details the respondent referred to as missing in example 2 were the mixing and shear conditions (see respondent's letter dated 2 November 2009, the paragraph bridging pages 3 and 4). Example 2 of document (D7) only refers to stirring with a high-speed stirrer (see page 4, line 38: "... mit einem Schnellrührer eingerührt ...")

In document (D14) the mixing and shearing conditions were varied by varying the stirring speed from 90 to 150 rpm (see runs 1 to 3 in table 1 on page 3).

As can be seen from table 3 on page 7, this variation in stirrer speed leads to a variation in weight average particle size from 247 nm at 90 rpm (run 2) through 255
at 120 rpm (run 1) to 256 nm at 150 rpm (run 3) (as
determined by MAS using the multimodal model).

The same table indicates a weight average particle size
of 270 nm for run 4. This run concerns the process
where the stirring speed was 120 rpm and, in contrast
to run 1, the seed emulsion was added to the water
phase at room temperature, as specified in example 2 of
document (D7) (see document (D14), the sentence
bridging pages 1 and 2).

For these reasons, table 3 of document (D14) shows that
three out of four runs yield a weight average particle
size within the range of 250 to 400 nm as required in
present claim 1. Moreover, run 4, which followed most
closely the process described in example 2 of document
(D7), shows a particle size well within this range.

2.4 The respondent remarked that those average particle
sizes were not determined by the method mentioned in
the patent in suit. However, the present claims do not
refer to a method for determining the average particle
size. The only reference to such a method is found in
the last sentence in paragraph [0024] of the patent in
suit, which reads as follows:

"The average particle size and particle size
distribution may be determined by the capillary
hydrodynamic fractionation (CHDF) technique as is known
in the art." (emphasis added).

Consequently, even the description does not indicate
that the CHDF technique must be used when determining
the average particle size.
2.5 Hence, the Board comes to the conclusion that the subject-matter of claim 1 of the main request lacks novelty in view of document (D7). As the Board can only decide on a request as a whole, the main request is refused.

3. First Auxiliary Request

This request differs from the main request only in that in the last sentence in paragraph [0024] of the description of the patent in suit the words "may be" have been replaced by "are".

It was under dispute whether or not this amendment in the description could render the subject-matter of the claims novel. The respondent relied on Article 69(1) EPC which reads as follows:

"The extent of the protection conferred by a European patent or a European patent application shall be determined by the claims. Nevertheless, the description and drawings shall be used to interpret the claims."

The Board refers to decision T 881/01 of 19 March 2004, and in particular to point 2.1 of the reasons where the following is stated:

"While it is true that Article 69(1) EPC second sentence states that the description and drawings shall be used to interpret the claims, this does not make it legitimate to read into the claim features appearing only in the description and then relying on such features to provide a distinction over prior art. This
would not be to interpret claims but to rewrite them. The preparatory material available on the discussions leading up to the European Patent Convention, shows that the effect of Article 69 EPC and its Protocol on Interpretation was always only considered in relation to extending the extent of protection conferred beyond the strict literal meaning of the terms of the claims, and never for excluding what on the clear meaning was covered by the terms of the claims. Certainly in proceedings before the EPO, where the Patentee has the opportunity of cutting down his claims to accord with stricter limits given in the description, the scope of a claim should not be cut down by implying into it features which appear only in the description, as this would deprive claims of their intended function."

For these reasons, the amendment of the description cannot render the subject-matter of the claims novel.

Consequently, the first auxiliary request is refused.

4. Second Auxiliary Request

4.1 Article 100(b) EPC

4.1.1 The appellant's objections were based on two arguments (see under point VIII above).

On the one hand, the "acid component" mentioned in claim 1 could be any external acidic component. There was no information in the patent in suit about how to implement a binder for an ink jet ink without acidic monomers.
On the other hand, the patent in suit did not specify whether the weight or the number average particle size was to be determined. As the weight and number average values could differ considerably, the person skilled in the art did not know if he was working within the ranges indicated in the present claims.

4.1.2 As far as the first argument is concerned, it was disputed whether the wording of claim 1 required that the acid component formed part of the polymer or whether it could also be a separate compound.

When assessing which interpretation is correct it is necessary to have a look at the syntax of the claim.

"A polymeric binder comprising a polymer having a glass transition temperature ..., an average particle diameter ..., a particle size distribution ..., and an acid component present in a range from 1 to 10 wt.% of the polymer."

The respondent showed by means of documents (D9) to (D11) that a final comma before the word "and" is commonly used when three or more items are joined by the word "and" (see e.g. (D11), bottom paragraph in the centre column). That means that the claim is to be understood as directed to a polymer which has to meet the three requirements, namely those relating to
- the average particle diameter,
- the particle size distribution, and
- the acid component.

This clearly indicates that the acid component forms an integral part of the polymer. Therefore, the Board does
not share the appellant's view that the claims permit the acid component to be a component separate from the polymer.

4.1.3 The appellant's second argument was based on the fact that the patent in suit does not specify whether the particle size referred to in the claims is to be the weight or the number average. The Board agrees with the appellant that these average values may differ considerably.

It was, however, under dispute whether this could be subsumed under a ground for opposition under Article 100(b) EPC or whether this was rather an objection as to the clarity of the claims.

The Board refers to decision T 593/09 of 20 December 2011 which states under point 4.1.4 of the reason that "where a claim contains an ill-defined ("unclear", "ambiguous") parameter and where, as a consequence, the skilled person would not know whether he was working within or outside of the scope of the claim, this, by itself, is not a reason to deny sufficiency of disclosure as required by Article 83 EPC. Nor is such a lack of clear definition necessarily a matter for objection under Article 84 EPC only. What is decisive for establishing insufficiency within the meaning of Article 83 EPC is whether the parameter, in the specific case, is so ill-defined that the skilled person is not able, on the basis of the disclosure as a whole and using his common general knowledge, to identify (without undue burden) the technical measures (e.g. selection of suitable compounds) necessary to
solve the problem underlying the patent at issue." (see also T 608/07 of 27 April 2009, point 2.5.2 of the reasons).

In the present case, the appellant has not shown that the skilled person could not identify the technical measures necessary to solve the problem underlying the patent in suit. Nor is it a priori plausible that the skilled person could not identify these measures, e.g. by repeating an example of the patent in suit, by determining both the weight and the number average particle sizes of the product thus obtained and by comparing these with the respective value indicated in said example.

4.1.4 For these reasons, the Board decided that no grounds under Article 100(b) EPC prejudice the maintenance of the patent based on the second auxiliary request.

4.2 Article 123(2) EPC

The appellant argued that the claims amended by inserting the words "as determined by capillary hydrodynamic fractionation" contravened the requirements of this Article.

The respondent referred to the sentence bridging pages 9 and 10 of the application as filed. This sentence reads as follows:

"The average particle size and particle size distribution may be determined by the capillary hydrodynamic fractionation (CHDF) technique as is known in the art."
In fact, capillary hydrodynamic fractionation is the only method of measurement for these two properties disclosed in the application as filed. For this reason the application as filed discloses directly and unambiguously to the person skilled in the art to determine these properties referred to in the claims by capillary hydrodynamic fractionation.

The Board ascertained that no other amendments introduce subject-matter which extends beyond the content of the application as filed. Hence, it decided that the patent as amended in accordance with the second auxiliary request does not contravene the requirements of Article 123(2) EPC.

4.3 Article 84 EPC

4.3.1 The amended claims specify that the average particle size and the particle size distribution are to be determined by capillary hydrodynamic fractionation. That still leaves open the question whether the average particle size is to be calculated as a weight or as a number average. The appellant considered the claims to lack clarity as the weight and the number averages could differ considerably.

4.3.2 Lack of clarity of the claims is no ground for opposition (see Article 100 EPC). Therefore, clarity of the claims is assessed during opposition and opposition appeal proceedings only insofar as any lack of clarity of the claims is caused by amendments after grant.
4.3.3 Neither the claims of the second auxiliary request nor the claims as granted specify whether the average particle sizes were to be calculated as weight or as number averages. There is no indication that the amendment, namely the specification of the method of measurement, renders the claim less clear. Hence, the alleged lack of clarity was already present in the claims as granted.

Consequently, the alleged lack of clarity of the claims does not prejudice the maintenance of the patent.

4.4 Novelty

4.4.1 During the oral proceedings before the Board, the appellant did not maintain its novelty objections against the claims of the second auxiliary request.

4.4.2 Its initial objections were based on any of the documents (D2), (D7) and (D13).

The subject-matter of the claims of the second auxiliary request differs from that disclosed in document (D2) in that the latter does not disclose the combination of

- an average particle size of from 250 to 400 nm,

and

- an acid component content of from 1 to 10 wt.% of the polymer.

Said subject-matter also differs from the product of example 2 of document (D7) in that the weight and number average particle sizes determined by capillary hydrodynamic fractionation (CHDF) are well below the
range of from 250 to 400 nm (see (D14), table 2 on page 6).

Lack of novelty was not shown
− in view of examples 1, 3 and 4 of document (D7), as the respective average particle sizes were not determined by CHDF but by means of a Mastersizer particle size analyser (MAS) using the multimodal model in document (D14) (see point 1.3 of (D14), in particular tables 5 to 7 on pages 10-12);
− and in view of example 2 of document (D13), because the respective average particle sizes were determined by laser aerosol spectroscopy (LAS) (see document (D15))

and as table 2 of document (D14) shows that these different methods of measurement may yield considerably different average values for the same particle size distribution.

4.4.3 The Board ascertained that neither any other parts of documents (D2), (D7) and (D13) nor any other document cited disclosed the subject-matter of the present claims.

For these reasons, the subject-matter of the claims of the second auxiliary request is novel.
4.5 Inventive step

4.5.1 The closest state of the art

"... in accordance with the established case law of the Boards of Appeal the "closest prior art" for assessing inventive step is normally a prior art document disclosing subject-matter conceived for the same purpose as the claimed invention and having the most relevant technical features in common" (T 482/92 of 23 January 1997, point 4.1 of the reasons).

The purpose of the products claimed in the patent in suit was to serve as "binders for water-resistant ink jet inks" (see the first sentence in paragraph [0001] of the patent or the first sentence of the application as filed).

It was disputed whether document (D2) or document (D4) represented the closest prior art.

The purpose of the emulsions disclosed in document (D2) was to prepare water-based paints (see the first sentence in column 1), whereas document (D4) relates to an "ink jet recording liquid" (see the title of the respective Patent Abstract of Japan and the translation of paragraph [0001] of the description).

For these reasons, document (D4) rather than (D2) is to be considered as the closest prior art.

4.5.2 Document (D4) discloses an ink jet ink containing a water-dispersible resin having an average particle diameter (measured by laser beam scattering) of from 20
to 300 nm and which contains at most 3 wt.-% of particles having a particle size of 500 nm or more (see claim 3 and the abstract). Acrylic, methacrylic, itaconic, fumaric and maleic acids are mentioned as monomers in paragraph [0019].

4.5.3 The problem to be solved

One of the problems addressed in the application as filed was "to develop an inkjet ink binder which ... will not clog the printer head nozzle or other aspects of the print mechanism" (see page 5, lines 22-28).

When discussing which problem was actually solved in view of the closest prior-art document (D4), the appellant referred to the examples of the patent in suit to show that binders not meeting the requirements of present claim 1 were acceptable for the present purpose. It is true that two of the examples of the patent in suit do not meet all the requirements of present claim 1, namely

- example 3 (because the particle size distribution is outside the range claimed) and
- example 6 (because the average particle size is too low).

However, as the respondent stated, the binder of example 3 was not tested to determine any clogging of the nozzles of the printer head, whereas for example 6 no quantitative measurement of clogging was made.

The respondent referred rather to document (D6), in particular to the table on page 6.
This table lists two groups of examples, namely examples 1 to 5 (group 1) and examples 6 and 8 to 11 (group 2). Within each of these groups, the compositions of the monomers yielding the polymers was identical (see document (D5) for examples 1 to 5, and document (D6) for examples 6 to 11), which leads to practically identical glass transition temperatures $T_g$ within each group (see (D6), the table and point 4 on page 2).

Whereas the binders of examples 1, 2, 6 and 8 meet the requirements of the present claims with respect to average particle size (250 to 400 nm) and particle size distribution (130 to 450 nm), the binders of examples 3 to 5 and 9 to 11 have average particle sizes below 250 nm and particle size distributions the lower boundaries of which are below 130 nm, which renders the latter examples comparative.

It has now to be assessed whether these comparative examples can serve to compare the claimed invention with the closest prior art (D4).

According to document (D4) the average particle diameter of the resin (measured by laser beam scattering) is from 20 to 300 nm where at most 3 wt.-% of particles have a particle size of 500 nm or more (see point 4.5.2 above). The average particle diameters determined for the resins in the examples were 100 nm (example 1, see paragraph [0042] and 80 nm (examples 2 and 3, see paragraphs [0043] and [0044]). This implies that the lower boundary of the particle size distribution is lower than 100 nm or 80 nm, respectively. Taking into account that laser beam scattering used in document (D4) may yield particle
sizes comparable to those obtained by CHDF, one can conclude that document (D4) favours particle sizes lower than those claimed in the patent in suit (see table 2 on page 6 of document (D14) where particle sizes determined by laser beam scattering (LAS) and CHDF are given for the product of example 2 of document (D7)). As the binders obtained in comparative examples 3 to 5 and 9 to 11 differ only by their lower particle sizes and particle size distributions from those of the present claims, they may serve to compare the subject-matter of the present claims with the binders disclosed in document (D4).

In each of the groups 1 and 2, the binders of the comparative tests lead to the clogging of more nozzles (which results in fewer of the 208 nozzles firing) than those according to the present claims.

Hence, a problem posed and successfully solved by the subject-matter of the present claims in view of document (D4) may be the provision of an inkjet ink binder which is less likely to clog the printer head nozzles.

4.5.4 The solution

Document (D4) addresses the problem of clogging the printer nozzles in paragraph [0008]. The only means for avoiding the clogging of the nozzles explicitly mentioned in this document is to avoid "coarse particles" of carbon black, i.e. particles of a larger size (see the penultimate sentence in paragraph [0014]). Hence, there is no indication in document (D4) that lower particle sizes may lead to more clogging.
For this reason, document (D4) alone cannot render the subject-matter of the present claims obvious.

Document (D4) is the only cited prior-art document relating to ink jet inks. Document (D2) (which relates to water-based paints) does not address the problem of avoiding any type of clogging of nozzles of any type. Therefore, document (D4) can also not render the subject-matter claimed obvious if it is combined with the disclosure of document (D2). The Board is not aware of any other cited prior-art documents which render the subject-matter claimed obvious.

4.6 Consequently, the subject-matter of claim 1 is based on an inventive step. The same applies to claims 2 to 8 which are directed to preferred embodiments of claim 1.

5. The adapted description

The Board ascertained that the amendment in the description serves only to adapt it to the claims of the second auxiliary request. The appellant did not object to this amendment.

6. The minutes of the oral proceedings before the Board

In the course of the oral proceedings before the Board, the respondent stated how the requirement in claim 1 of all the requests that the particle size distribution be "such that the particles have a diameter in the range from 130 to 450 nm" should be interpreted. The appellant requested that this statement be included in the minutes.
According to Rule 124(1) EPC, minutes of oral proceedings must contain "the essentials of the oral proceedings" and "the relevant statements made by the parties". It is within the discretion of the minute-writer to decide what is "essential" or "relevant" (see T 212/97 of 8 June 1999, point 2.2 of the reasons).

In the present case, said statement of the respondent had no effect on the outcome of this decision, but rather was considered to be of use only in any subsequent proceedings in national courts. Such statements neither constitute "essentials of the oral proceedings" nor are "relevant statements" within the meaning of Rule 124(1) EPC (see T 263/05, OJ EPO 2008, 321, point 8 of the reasons).

For these reasons, it was decided not to include said statement or a summary thereof in the minutes of the oral proceedings before the Board.

7. For the reasons given above, the claims of the second auxiliary request and the description adapted thereto meet the requirements of the EPC.
Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the department of the first instance with the order to maintain the patent as amended in the following version:

   **Description:**
   pages 1-3 and 5-10 of the specification of the patent as granted;
   page 4 of the patent specification as amended and filed during the oral proceedings on 3 August 2012.

   **Claims:**
   claims 1-8 according to the second auxiliary request as filed with the letter dated 18 May 2012.

The Registrar: The Chairman:

M. Schalow P. Ranguis