

BESCHWERDEKAMMERN
DES EUROPÄISCHEN
PATENTAMTS

BOARDS OF APPEAL OF
THE EUROPEAN PATENT
OFFICE

CHAMBRES DE RECOURS
DE L'OFFICE EUROPEEN
DES BREVETS

Internal distribution code:

- (A) Publication in OJ
(B) To Chairmen and Members
(C) To Chairmen

D E C I S I O N
of 13 April 1994

Case Number: T 0153/92 - 3.3.3

Application Number: 86117371.4

Publication Number: 0229992

IPC: H01B 1/12

Language of the proceedings: EN

Title of invention:
Processable conductive polymers

Applicant:
Polaroid Corporation

Opponent:
-

Headword:
-

Relevant legal norms:
EPC Art. 56

Keyword:
-

Decisions cited:
-

Catchword:
-



**Europäisches
Patentamt**

**European
Patent Office**

**Office européen
des brevets**

Beschwerdekammern

Boards of Appeal

Chambres de recours

Case Number: T 0153/92 - 3.3.3

D E C I S I O N
of the Technical Board of Appeal 3.3.3
of 13 April 1994

Appellant: Polaroid Corporation
549 Technology Square
Cambridge
Massachusetts 02139 (US)

Representative: Reitzner, Bruno, Dr.
Patentanwältin Dipl.-Ing. R. Splanemann
Dr. B. Reitzner
Tal 13
D - 80331 München (DE)

Decision under appeal: Decision of the Examining Division of the European Patent Office dated 9 September 1991, issued on 14 October 1991 refusing European patent application No. 86 117 371.4 pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: C. Gérardin
Members: R. Lunzer
F. Benussi

Summary of Facts and Submissions

I. European patent application No. 86 117 371.4, publication No. 0 229 992, was filed on 13 December 1986, having a priority date of 20 December 1985 derived from US application No. 811 281.

II. By its decision given orally on 9 September 1991, and issued in writing on 14 October 1991, the Examining Division refused the application, holding that although the alleged invention was novel over the prior art, which included the following cited documents:

- (1) EP-A-0 104 726 and
- (2) EP-A-0 160 207,

there was no inventive step, because it involved no more than substituting chemical oxidation for the electrolytic oxidation disclosed in document (2), and replacing the allegedly soluble counterions there disclosed with counterions which were present in a dispersed phase.

The single independent Claim 1 in the form considered by the Examining Division was in the following form:

"A method for the production of a processable conductive polymer which comprises oxidatively polymerizing, in a polymerization reaction medium, an aromatic heterocyclic or aniline salt monomer oxidatively polymerizable to a cationic polymer, said reaction medium including a reaction medium-soluble chemical oxidizing agent for said oxidatively polymerizable monomer and, in a dispersed phase on said

reaction medium during the polymerization and as a counteranion for said cationic polymer, a polymer having anionic surface character."

III. An appeal against that decision was filed on 14 December 1991, the appeal fee was paid on the same day, and the Statement of Grounds of appeal was filed on 8 February 1992. In its grounds of appeal, and during oral proceedings held on 13 April 1994, the Appellant contended essentially that the alleged invention could be distinguished over the disclosure of document (2), in that the electrolytic oxidation there disclosed was replaced by chemical oxidation, while in relation to document (1), it was argued that that citation required the counterions to be soluble, whereas in accordance with the alleged invention the counterions took the form of dispersed latex particles. The prior art contained no suggestion of any way of forming a conducting polymer as a coatable dispersion, which was to be contrasted with the solid polymers, in powdered or other form, which precipitated from the reaction medium, as disclosed in the prior art. The novel coatable dispersion made available for the first time by the alleged invention was a useful product, which was not in any way foreshadowed in the prior art.

IV. At the oral proceedings, the Appellant filed two sets of claims to be considered as its main and auxiliary requests, Claim 1 in each case readings as follows:

Main request

"A method for the production of a processable conductive polymer **dispersion** which comprises oxidatively polymerizing, in a polymerization reaction medium, an aromatic heterocyclic or aniline salt monomer oxidatively polymerizable to a cationic polymer, said

reaction medium including a reaction medium-soluble chemical oxidizing agent for said oxidatively polymerizable monomer and, in a dispersed phase in said reaction medium during the polymerization and as a counteranion for said cationic polymer, polymeric **latex particles** having anionic surface character."

Auxiliary request

"A method for the production of a processable conductive polymer **dispersion** which comprises oxidatively polymerizing, in a polymerization reaction medium, an aromatic heterocyclic or aniline salt monomer oxidatively polymerizable to a cationic polymer, said reaction medium including a reaction medium-soluble **non-cationic** chemical oxidizing agent for said oxidatively polymerizable monomer and, in a dispersed phase on said reaction medium during the polymerization and as a counteranion for said cationic polymer, polymeric **latex particles** having anionic surface character."

- V. The Appellant requested that the decision under appeal be set aside, and a patent be granted on the basis of Claims 1 to 10 as filed during the oral proceedings, in accordance with its main or in accordance with its auxiliary requests, and the description to be adapted.

Reasons for the Decision

1. The appeal is admissible.
2. *Admissibility of amendments*

The Board did not permit the introduction of the word "directly" before "processable" in the first line of

Claim 1 of both requests on the ground that it would make the claims unclear contrary to Article 84 EPC. The rejection of that proposed amendment was accepted at the start of the oral proceedings by the Appellant, with the result that the claims considered then, and equally in the present decision, took the form set out above. The remaining amendments, viz. the introduction of the terms "dispersion" and "polymeric latex particles" in Claim 1 according to the main request, and "non-cationic" in accordance with the auxiliary request, are admissible for the purposes of Article 123(2). That the end product takes the form of a dispersion is mentioned on page 14, line 24, while the counterion polymer taking the form of polymeric latex particles is mentioned in the description on page 10, line 12 to page 11, line 13, and also on page 13, line 25 to page 14, line 8 of the application as filed. Regarding the auxiliary request, although the term "non-cationic" is not used as such in the description of the possible oxidising agents in the passage from page 6, line 26 to page 7, line 31, it is observed that those identified are in fact either non-ionic, or are identified as being anionic (page 7, line 24). That is regarded for the present purposes as being a sufficient disclosure to make the amendment admissible. In both sets of claims, the dependent process Claims 2 to 9 correspond to Claims 3 to 10 as originally filed, and the features recited in Claim 10 are supported by page 14, lines 26 to 28 of the application as filed.

3. *Novelty*

Novelty was not challenged by the Examining Division. Having reviewed the cited documents, the Board is satisfied that none of them discloses a method having

all the features defined in Claim 1. Therefore the subject-matter of Claim 1 is considered novel within the meaning of Article 54 EPC.

4. *The closest prior art*

Although the Examining Division regarded documents (1) and (2) as being equally suitable for designation as the closest prior art, the Board prefers to start from document (2), it being an earlier application of the present Appellant, which was published some six weeks before the priority date of the application in suit. It differs from the alleged invention only in that it discloses electrochemical oxidation, whereas chemical oxidation is the subject of the application in suit.

5. *Problem*

Seen against that prior art, the problem underlying the application in suit may thus be regarded as providing an alternative to the electrochemical oxidation described in the prior art, and the Board accepts as credible the Appellant's argument that there is advantage in being able to dispense with electrical apparatus and its attendant complexities.

6. *Inventiveness*

6.1 The issue of inventiveness turns on whether a skilled person, having as his starting point the disclosure of document (2) and wishing to avoid the use of electrical equipment, would have foreseen that chemical oxidation afforded a suitable alternative. Even in the absence of directly relevant prior art, it can be assumed that a skilled person would find it obvious to try chemical oxidation if he wished to avoid the inconvenience of using electrical apparatus.

6.2 However, the matter does not end there. Document (1), which discloses the production of very similar conductive polymers, refers on page 7, line 10 to page 8, line 3 to the use of electrochemical oxidation, and then goes on in the next paragraph on page 8, lines 4 to 15 to teach that in the production of these compositions, chemical oxidation can be regarded as an equivalent to electrochemical oxidation. In the light of that teaching, the Board concludes that, starting with the teaching of document (2), it would have been obvious to the skilled worker to replace its electrochemical oxidation by the chemical oxidation of document (1), and that there is therefore no inventive step in the claimed subject-matter as defined in the main request.

6.3 For the sake of completeness it is added that if document (1) were to be treated as the closest prior art, it differs only in that the anionic dopant there used, corresponding to the counteranion polymeric latex particles of Claim 1 in suit, is said to be in solution, whereas in accordance with the alleged invention it is required to be in a dispersed phase. In common with the Examining Division, the Board feels some doubt as to whether in fact that distinction can validly be drawn, but again like the Examining Division, it is prepared to give the Appellant the benefit of that doubt. The issue would then be whether it would have been obvious to the skilled worker to have substituted the dispersed latex counteranions of document (2) for the soluble counteranions of document (1). The Board can see no reason for not doing so, nor has the Appellant identified any unexpected advantage in so doing. If, in place of a solid polymer which precipitates from solution, a polymer in suspension is desired, the Board considers that the obvious starting point for attaining that end would be to use one of the main reactants in

the form of a dispersed phase, in the reasonable expectation that the resulting polymer will also take the form of a dispersed phase.

7. *Auxiliary request*

Although the auxiliary request introduces the further feature that the chemical oxidising agents must be of a non-cationic character, the Appellant has not adduced any facts demonstrating that even if Claim 1 in accordance with the main request, i.e. without this feature, were lacking in inventive merit, the use of oxidising agents of the category identified in Claim 1 of the auxiliary request introduced some unexpected and inventive advantage. In the absence of such evidence, the Board is satisfied that Claim 1 in accordance with the auxiliary request is also lacking in any inventive step.

8. *Conclusion*

For the above reasons, the Board considers that the alleged inventions in accordance with the main and the auxiliary requests lack any inventive step, and therefore fail to meet the essential requirement of Article 56 EPC. In the absence of a separate request directed to the specific features mentioned in dependent Claims 2 to 10, the latter must fall with the main claim, since a request can only be considered as a whole. Besides, no argument in favour of the inventiveness of any of these features has been provided by the Appellant.

Order

For these reasons, it is decided that:

The appeal is dismissed.

The Registrar:



E. Gorgnaier

The Chairman:



C. Gérardin