

Patents for Researchers

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Patent

A property right granted by the Government to an inventor “to exclude others from *making, using, offering for sale, or selling the invention or importing the invention*” for a *limited time* in exchange for public disclosure of the invention when the patent is granted.

Patentability

- **Novelty** - New, hitherto unknown, not in public domain, not published, not discussed, not used, not sold, experimental use
- **Utility** - Capable of industrial application (Process invented, then product)
- **Non obviousness** - Not obvious to one skilled in the art (PHOSITA)

Some definitions

- '(l) "**new invention**" means any invention or technology which has not been anticipated by publication in any document or used in the country or elsewhere in the world before the date of filing of patent application with complete specification, i.e. the subject matter has not fallen in public domain or that it does not form part of the state of the art;
- (ja) "**inventive step**" means a feature of an invention that involves technical advance as compared to the existing knowledge or having economic significance or both and that makes the invention not obvious to a person skilled in the art;';

Inventive step

- ✓ Unanticipated
- ✓ Surprising, unexpected, unpredictable
- ✓ Long felt, but unresolved need
- ✓ Problem in the art hitherto unsolved
- ✓ Advantages-Cost, Yield, Conversion, Selectivity
- ✓ Adequately supported by examples
- ✓ Documentary support
- ✓ Support by comparative examples
- ✓ Combination of prior arts leading to predictable results

PHOSITA

- Factors that may be considered in determining level of ordinary skill in the art include the educational level of the inventor;
- type of problems encountered in the art;
- prior art solutions to those problems;
- rapidity with which innovations are made;
- sophistication of the technology; and
- educational level of active workers in the field

Contents

- Title
- Technical field
- Background and prior art
- Objectives
- Summary of the invention
- Description of drawings
- Detailed description
- Examples
- Advantages and use of invention
- Claims
- Abstract
- Drawings

Contents.....

- **Title**
- Not more than 15 words
- suggesting the area of the invention.
- Use of words “Novel”, “New” or commonly used words such as “compounds”.

- **Technical field**
- Brief, 1-2 sentences,
- used by patent office to determine examiner to be assigned to and to determine class of the patent application

Contents.....

- **Background and prior art**
 - Explain where technology stands as of today with help of patents and published literature
 - bring out problems/issues/lacuna in prior art
 - Objectives
 - Bring out the need for solution and
 - Objectives that will be achieved from the invention
- **Summary**
- **Description of drawings**

Contents.....

- Detailed description
- Describe the invention in detail.
- Give all variables, embodiments (representations), ranges, concentrations, possibilities
- What is not described cannot be claimed, claim all that is disclosed
- Should be clear, concise, terms adequately qualified or defined and interconnected, logical, good flow
- Examples

Contents

- Advantages and uses
- Claims
- Defines the scope or borders of the invention
- Protects the inventor from infringers
- Independent claims and dependent claims
- Language style-legal
- Abstract
- Drawings

Some questions

- What do you want to do with your patent?
- Do you think it is easy to infringe your patent?
- Are you going to practise the patent?
- Have you applied to prevent others from practicing the art?
- Are you an individual inventor?
- Do you have the resources to apply and prosecute the patent application in all countries where there is a market for your invention?

Some more questions

- The assignee of the patent is a corporate, research institute or academia.
- What are the markets for your invention?

Some vital points to remember

- Getting a patent granted is not the only criteria, have an eye on winning a possible litigation
- Obtain broad claims that are strong and can withstand challenges
- Claim construction is very important, drafting specification is also very important
- Patent is a teaching aid, but only to one skilled in the art

Points to remember-procedures

- Know what the law says
- Priority date
- Indian, US, PCT, EU
- Know your deadlines
- Understand unity of invention,
patent of addition, provisional,
complete

Drafting-Best Practices

- **Specification**- Words such as “essential, superior, peculiar, very good, critical, key, very important, special, necessary-narrows scope
- Organize the paragraphs well and make them logical
- Do not give unnecessary information

Drafting-Best Practices

- Use terms consistently, alternately
- Define terms (eg prevent flow of air and prevent passage of air)
- **Language style-** Technical, legal and plain English
- Good English with an eye for grammar

Drafting-Best Practices

- Background and prior art

Giving closest prior art Vs

Not doing so

Adv: You are trying to bring out novelty of invention and overcome non obviousness.

Disadv: Your characterization of prior art may be limiting to your application

Drafting-Best Practices

- **Enablement**
- the patent should be enabled.
- the idea should be reduced to practice and person skilled in the art should be able to learn from the patent and do the same.
- The manner and process of using the invention should be described in clear and concise terms.

Drafting-Best Practices

- **Embodiment and Preferred embodiment:**
- Describe all possibilities, combinations, conditions of the invention.
- Preferred embodiment is one of the best mode to practice the invention

- **Claims**
- Broad to narrow-Funneling
- Independent, dependent and multiple dependent claims
- Qualify all terms used
- Claim should be broad, not just cover one embodiment
- Use of comprising, consisting, containing, selected/chosen from, from a group of

Claims

- Use of A, the
- “A” generally may mean one or more, but if you claim “A solution consisting of” it means only this solution
- Described, but not claimed amounts to public disclosure, can be practised by others

Drafting-Best Practices

- **Summary**
- Statement of invention including all independent and dependent claims

- **Abstract**
- Usually claim 1 or all independent claims in non-claim language
- Do not narrow scope of the claims by what is written in Abstract

Types of claims

- Independent claims
- Dependent claims
- Multi dependent
- Markush
- Jepson
- Swiss
- Product
- Process
- Method
- Product by process
- Exhausted combination
- Beauregard
- Omnibus

Cargill case study

Lactide polymer compositions and
process for preparation thereof

CARGILL PORIFOLIO OF LACTIDE PATENTS

SR NO	US PATENT NO	PRIORITY AND CONTINUITY DATA	CLAIM 1
1	5338822	-----	<p>A melt-stable lactide polymer composition, comprising:</p> <ul style="list-style-type: none"> (a) a plurality of polylactide polymer chains, said plurality having a number average molecular weight of from about 10,000 to about 300,000; (b) lactide in a concentration of less than about 2 percent by weight; (c) water, if present at all, present in a concentration of less than about 1000 parts-per-million; and (d) a stabilizing agent in an amount sufficient to reduce depolymerization of said plurality of polylactide polymer chains during melt-processing, such that the generation of lactide is less than about 2 percent by weight of the composition from a devolatilized sample in the first hour at a temperature of 180.degree. C. and atmospheric pressure.

2	5484881	CIP of 1	<p>An amorphous film exhibiting a net endotherm of less than about 10 joules per gram of poly(lactide) polymer, said film comprising a melt stable, lactide polymer composition, said composition comprising:</p> <ul style="list-style-type: none">i) a plurality of poly(lactide) polymer chains, said polymer chains being reaction products of polymerizing a lactide mixture comprising greater than about 1 percent by weight meso-lactide, with the remaining lactide being selected from the group consisting of L-lactide, D-lactide and mixtures thereof, said plurality having a number average molecular weight of from about 10,000 to about 300,000;ii) residual lactide in a concentration of less than about 2 percent by weight; andiii) water, if present at all, present in a concentration of less than about 2000 parts per million.
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3	5536807	CIP of 1	<p>A semi-crystalline film exhibiting a net endotherm greater than about 10 joules per gram of poly(lactide) polymer, comprising a melt stable polymer composition, said composition comprising:</p> <ul style="list-style-type: none">i) a plurality of poly(lactide) polymer chains, said polymer chains being reaction products of polymerizing a lactide mixture comprising less than about 15 percent by weight meso-lactide, with the remaining lactide being selected from the group consisting of L-lactide, D-lactide and mixtures thereof, whereby at least about 85% of the lactide is either L-lactide or D-lactide, said plurality having a number average molecular weight of from about 10,000 to about 300,000;ii) residual lactide in a concentration of less than about 2 percent by weight; andiii) water, if present at all, present in a concentration of less than about 2000 parts per million.
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4	5585191	CIP of 1 and 2	<p>A film having a net endotherm of less than about 10 joules per gram of polymer containing chains including lactic acid residuals; said film further comprising:</p> <p>(a) a melt-stable polymer composition including at least 5% by weight of a melt-stable first polymer component including polymer chains containing lactic acid residuals, based on total weight of melt-stable polymer in said melt-stable polymer composition;</p> <p>(i) said first polymer component being formed from at least:</p> <p>(A) a source of (R)-lactic acid residuals; and,</p> <p>(B) a source of (S)-lactic acid residuals;</p> <p>(ii) said first polymer component having (R)-lactic acid residuals and (S)-lactic acid residuals in a distribution in the polymer such that sequences of a major lactic acid residual have at least a 0.5 probability of including a sequence of less than 10 of the major lactic acid residuals consecutively;</p> <p>(b) said first polymer component having a number average molecular weight of at least 40,000 and no greater than about 300,000; and,</p> <p>(c) said melt stable polymer composition having a lactide concentration, if present at all, of less than about 2% by weight of melt-stable polymer in said first polymer component;</p> <p>(d) said melt-stable first polymer component being a material in a form sufficiently melt stable such that a devolatilized sample of it, when isolated and prior to formation of said melt-stable polymer composition, will show formation of less than 1% lactide presence, by weight, after heating for 1 hour at 180.degree. C.</p>
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5	5773562	CIP of 1 and 3	<p>A film having a net endotherm greater than about 10 joules per gram of polymer that contains chains including lactic acid residuals;-said film further comprising:</p> <p>(a) a melt stable polymer composition including at least 5%, by weight, of a melt stable first polymer component including polymer chains with at least lactic acid residuals, based on total weight of melt stable polymer in said melt stable polymer composition;</p> <p>(i) said first polymer component being formed from at least:</p> <p>(A) a source of (R)-lactic acid residuals; and</p> <p>(B) a source of (S)-lactic acid residuals;</p> <p>(ii) said first polymer component having (R)-lactic acid residuals and (S)-lactic acid residuals in a distribution in the polymer such that sequences of a major lactic acid residual have at least a 0.5 probability of including a sequence of at least 10 of the major lactic acid residuals consecutively;</p> <p>(b) said first polymer component having a number average molecular weight of at least 40,000 and no greater than about 300,000; and,</p> <p>(c) said first melt stable polymer composition having a lactide concentration, if present at all, of less than about 2% by weight of melt stable polymer including polymer chains with lactic acid residuals, in said first polymer component;</p> <p>(d) said melt stable first polymer component being a material in a form sufficiently melt stable such that a devolatilized sample of it, when isolated and prior to formation of said melt stable polymer composition, will show formation of less than 1% lactide presence, by weight, after heating for 1 hour at 180.degree. C.</p>
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6	5798436	CIP of 1, 2 and 4	<p>A film having a net endotherm greater than about 10 joules per gram of polymer that contains chains including lactic acid residuals;-said film further comprising:</p> <p>(a) a melt stable polymer composition including at least 5%, by weight, of a melt stable first polymer component including polymer chains with at least lactic acid residuals, based on total weight of melt stable polymer in said melt stable polymer composition;</p> <p>(i) said first polymer component being formed from at least:</p> <p>(A) a source of (R)-lactic acid residuals; and</p> <p>(B) a source of (S)-lactic acid residuals;</p> <p>(ii) said first polymer component having (R)-lactic acid residuals and (S)-lactic acid residuals in a distribution in the polymer such that sequences of a major lactic acid residual have at least a 0.5 probability of including a sequence of at least 10 of the major lactic acid residuals consecutively;</p> <p>(b) said first polymer component having a number average molecular weight of at least 40,000 and no greater than about 300,000; and,</p> <p>(c) said first melt stable polymer composition having a lactide concentration, if present at all, of less than about 2% by weight of melt stable polymer including polymer chains with lactic acid residuals, in said first polymer component;</p> <p>(d) said melt stable first polymer component being a material in a form sufficiently melt stable such that a devolatilized sample of it, when isolated and prior to formation of said melt stable polymer composition, will show formation of less than 1% lactide presence, by weight, after heating for 1 hour at 180.degree.</p>
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7	6005068	CIP of 1, 2, 4, 6	<p>An amorphous film containing polylactide polymer composition, said polylactide polymer composition comprising:</p> <ul style="list-style-type: none">(i) a plurality of polylactide polymer chains, said plurality having a number average molecular weight of from about 40,000 To about 250,000;(ii) residual lactide, if present at all, present in a concentration of less than about 0.5% by weight;(iii) said plurality of polylactide polymer chains being reaction products of polymerizing a mixture comprising between about one percent by weight and about 50 percent by weight meso lactide; and(iv) said amorphous film exhibiting a net endotherm of less than about 10 joules per gram of polylactide polymer composition.
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Thank you