

Section 3. Methodology as an IMRD component

Unit 3. Methodology: Vocabulary features

Outline

Effective vocabulary for Methodology section to:

- Provide introduction and overview of the materials/methods
- Supply background information
- Present specific and precise details about materials/methods
- Justify choices made
- Indicate appropriate care taken
- Relate materials/methods to other studies
- Locate problems occurred and solutions

HOW TO ?

1. Provide a general introduction and overview of the materials/methods
 - In this study, most of the samples were tested using a...
 - were supplied by...

HOW TO ?

2. Supply essential background information

- words and phrases used to describe instruments, equipment or locations
- items such as parallel to and equidistant

HOW TO ?

3. Present specific and precise details about materials and methods
 - verbs which specifically describe what was done/used: **optimize**, **extract**

HOW TO ?

4. Justify choices made

- phrases that introduce the reasons for the choices made: **in order to**
- verbs that specify the advantages of the choices made: **enable, facilitate**

HOW TO ?

5. Indicate that appropriate care was taken

- adjectives (**careful**)
- adverbs (**carefully**)

HOW TO ?

6. Relate materials/methods to other studies

ways to distinguish between:

- procedures/materials/tests which were **exactly the same** as those used by other researchers
- procedures/materials/tests which were **similar to** those used by other researchers
- procedures/materials/tests which were **significantly different**

HOW TO ?

7. Locate problems occurred and solutions
 - ways of minimising the problem, responsibility
 - maximising the good aspects
 - suggesting a solution to the problem

Areas of Methodology section model

How to

Example

1. Provide a general introduction and overview of the materials/methods

- In this study, most of the samples were tested using a...
- were supplied by...

2. Supply background information

- words and phrases used to describe instruments, equipment or locations
- items such as parallel to and equidistant

3. Present specific and precise details about materials and methods

- verbs which specifically describe what was done/used: **optimize, extract**

4. Justify choices made

- phrases that introduce the reasons for the choices made: **in order to**
- verbs that specify the advantages of the choices made: **enable, facilitate**

Areas of Methodology section model

How to

Example

5. Indicate that appropriate care was taken

— adjectives (**careful**) and adverbs (**carefully**)

6. Relate materials/methods to other studies

- procedures/materials/tests which were **exactly the same** as those used by other researchers
- procedures/materials/tests which were **similar to** those used by other researchers
- procedures/materials/tests which were **significantly different**

7. Locate problems occurred and solutions

- ways of minimising the problem, responsibility
 - maximising the good aspects
 - suggesting a solution to the problem
-

Find the words related to each section

Changes in the chemistry of alloys in the sites of Norilsk

Methodology

- 1.** The current investigation involved sampling and analysing six sites to measure changes in the properties of new alloys. **2.** The sites were selected from the Norilsk area, which is located in the north of Russia and has been frequently used to distinguish the composition of different alloys.^{2,3,4}
- 3.** A total of 18 samples was collected and then analysed for their physical and chemical properties. **4.** Samples 1–9 were collected in thoroughly-rinsed 25 ml brown glass bottles which were filled to the top and then sealed tightly to prevent contamination.
- 5.** The filled bottles were shipped directly to two separate laboratories at MISIS University, where they were analysed using standard methods suitably miniaturised to handle small quantities of alloy material.⁵
- 6.** Samples 10–18 were prepared in our laboratory using a revised version of the smelting method established by the NNN Institute in France.⁶ **7.** This method obtains the desired alloy through the combination of different metals; the resulting alloy can be cooled and stored easily. **8.** The samples were subsequently shipped to NNN for analysis by X-ray diffraction (XRD). **9.** All tubing used was stainless steel, and although two samples were at risk of oxidation as a result of brief contact with air, variation among samples was negligible.

Find the words related to each section

Changes in the chemistry of alloys in the sites of Norilsk

Methodology

1. The current investigation involved sampling and analysing six sites to measure changes in the properties of new alloys. **2.** The sites were selected from the Norilsk area, which is located in the north of Russia and has been frequently used to distinguish the composition of different alloys.^{2,3,4}

3. A total of 18 samples was collected and then analysed for their physical and chemical properties. **4.** Samples 1–9 were collected in thoroughly-rinsed 25 ml brown glass bottles which were filled to the top and then sealed tightly to prevent contamination.

5. The filled bottles were shipped directly to two separate laboratories at MISIS University, where they were analysed using standard methods suitably miniaturised to handle small quantities of alloy material.⁵

6. Samples 10–18 were prepared in **our** laboratory using a revised version of the smelting method established by the NNN Institute in France.⁶ **7.** This method obtains the desired alloy through the combination of different metals; the resulting alloy can be cooled and stored easily. **8.** The samples were subsequently shipped to NNN for analysis by X-ray diffraction (XRD). **9.** All tubing used was stainless steel, and although two samples were at risk of oxidation as a result of brief contact with air, variation among samples was negligible.

1. Provide a general introduction and overview of the materials/methods

What else?

- **general academic verbs:** attempt, consider, conduct, determine, investigate, report
- **technical verbs:** calculate, extract, isolate, formulate, incorporate, modify
- **verbs specific to the field:** clone, dissect, isotype, infuse

What else?

- **determiners:** all (of), both (of), each (of), many (of), most (of), the majority(of)
- **nouns:** (the) tests, samples, experiments, equipment, chemicals, models

More examples

- **The impact tests used in this work**
were a modified version of...

More examples

- **All reactions** were performed in 50 ml glass tubes...

More examples

- The substrate **was obtained from** the NNN Centre...

More examples

- **The material investigated** was a standard aluminium alloy; **all** melts were modified with sodium.

Find the words related to each section

Changes in the chemistry of alloys in the sites of Norilsk

Methodology

- 1.** The current investigation involved sampling and analysing six sites to measure changes in the properties of new alloys. **2.** The sites were selected from the Norilsk area, which is located in the north of Russia and has been frequently used to distinguish the composition of different alloys.^{2,3,4}
- 3.** A total of 18 samples was collected and then analysed for their physical and chemical properties. **4.** Samples 1–9 were collected in thoroughly-rinsed 25 ml brown glass bottles which were filled to the top and then sealed tightly to prevent contamination.
- 5.** The filled bottles were shipped directly to two separate laboratories at MISIS University, where they were analysed using standard methods suitably miniaturised to handle small quantities of alloy material.⁵
- 6.** Samples 10–18 were prepared in our laboratory using a revised version of the smelting method established by the NNN Institute in France.⁶ **7.** This method obtains the desired alloy through the combination of different metals; the resulting alloy can be cooled and stored easily. **8.** The samples were subsequently shipped to NNN for analysis by X-ray diffraction (XRD). **9.** All tubing used was stainless steel, and although two samples were at risk of oxidation as a result of brief contact with air, variation among samples was negligible.

Find the words related to each section

Changes in the chemistry of alloys in the sites of Norilsk

Methodology

1. The current investigation involved sampling and analysing six sites to measure changes in the properties of new alloys. **2.** The sites were selected from the Norilsk area, which **is located in the north of Russia** and **has been frequently used** to distinguish the composition of different alloys.^{2,3,4}

2. Supply essential background information

3. A total of 18 samples was collected and then analysed for their physical and chemical properties. **4.** Samples 1–9 were collected in thoroughly-rinsed 25 ml brown glass bottles which were filled to the top and then sealed tightly to prevent contamination.

5. The filled bottles were shipped directly to two separate laboratories at MISIS University, where they were analysed using standard methods suitably miniaturised to handle small quantities of alloy material.⁵

6. Samples 10–18 were prepared in our laboratory using a revised version of the smelting method established by the NNN Institute in France.⁶ **7.** This method obtains the desired alloy through the combination of different metals; the resulting alloy can be cooled and stored easily. **8.** The samples were subsequently shipped to NNN for analysis by X-ray diffraction (XRD). **9.** All tubing used was stainless steel, and although two samples were at risk of oxidation as a result of brief contact with air, variation among samples was negligible.

What else?

- **location/position:** opposite, out of, below, above, parallel (to/with), on the right/left, near, downstream (of), boundary, on the front/back, higher/lower, horizontal, circular, equidistant, on either side, within range (of), under, over, perpendicular (to), to the right/left (to), adjacent to, etc.
- **verbs:** be placed, be mounted (on), be aligned (with), extends, be attached to, form, be coupled (onto), be connected (to), be surrounded (by), be covered with/by, be located, be fastened (to), be fixed (to), be fitted (with) is joined (to), etc.

More examples

- The microstructure analysis revealed that **at the near end of** the alloy sample, the grain size was significantly larger compared **to the far end**, indicating variations in the cooling rate during solidification.

More examples

- Tensile testing of the alloy specimens showed that the mechanical properties were stronger **towards the edge**, suggesting a higher concentration of strengthening elements **in that region**.

More examples

- **Embedded in** the alloy matrix, the ceramic particles exhibited enhanced dispersion and improved structural integrity, enhancing the overall mechanical performance of the composite.

More examples

- **At the far end** of the alloy, the presence of intermetallic precipitates was observed, which contributed to the formation of a distinct phase boundary and affected the material's behavior under certain conditions.

Find the words related to each section

Changes in the chemistry of alloys in the sites of Norilsk

Methodology

- 1.** The current investigation involved sampling and analysing six sites to measure changes in the properties of new alloys. **2.** The sites were selected from the Norilsk area, which is located in the north of Russia and has been frequently used to distinguish the composition of different alloys.^{2,3,4}
- 3.** A total of 18 samples was collected and then analysed for their physical and chemical properties. **4.** Samples 1–9 were collected in thoroughly-rinsed 25 ml brown glass bottles which were filled to the top and then sealed tightly to prevent contamination.
- 5.** The filled bottles were shipped directly to two separate laboratories at MISIS University, where they were analysed using standard methods suitably miniaturised to handle small quantities of alloy material.⁵
- 6.** Samples 10–18 were prepared in our laboratory using a revised version of the smelting method established by the NNN Institute in France.⁶ **7.** This method obtains the desired alloy through the combination of different metals; the resulting alloy can be cooled and stored easily. **8.** The samples were subsequently shipped to NNN for analysis by X-ray diffraction (XRD). **9.** All tubing used was stainless steel, and although two samples were at risk of oxidation as a result of brief contact with air, variation among samples was negligible.

Find the words related to each section

Changes in the chemistry of alloys in the sites of Norilsk

Methodology

1. The current investigation involved sampling and analysing six sites to measure changes in the properties of new alloys. 2. The sites were selected from the Norilsk area, which is located in the north of Russia and has been frequently used to distinguish the composition of different alloys.^{2,3,4}

3. Provide specific and precise details about materials and methods

3. A total of 18 samples was collected and then analysed for their physical and chemical properties. 4. Samples 1–9 were collected in thoroughly-rinsed 25 ml brown glass bottles which were filled to the top and then sealed tightly to prevent contamination.

5. The filled bottles were shipped directly to two separate laboratories at MISIS University, where they were analysed using standard methods suitably miniaturised to handle small quantities of alloy material.⁵

6. Samples 10–18 were prepared in our laboratory using a revised version of the smelting method established by the NNN Institute in France.⁶ 7. This method obtains the desired alloy through the combination of different metals; the resulting alloy can be cooled and stored easily. 8. The samples were subsequently shipped to NNN for analysis by X-ray diffraction (XRD). 9. All tubing used was stainless steel, and although two samples were at risk of oxidation as a result of brief contact with air, variation among samples was negligible.

What else?

- **general academic verbs:** adapt, add, adopt, adjust, apply, arrange, assemble, calculate, carryout, characterize, collect, combine, etc.
- **technical verbs (=specific to the field):** extract, filter, anneal, quelch, etc.
- **less technical verbs (=what was done):** prepare, quantify, record, was regulate, remove, repeat, restrict, separate, stabilize, divide, eliminate, estimate, expose, etc.

More examples

- After **being annealed** at 800°C for two hours, the sample exhibited improved ductility and reduced internal stresses.

More examples

- To enhance the stability of the reaction, a small amount of stabilizing agent **was added** to the mixture.

More examples

- The color of the solution changed significantly after a dye **was added**, indicating the successful incorporation of the dye molecules.

Find the words related to each section

Changes in the chemistry of alloys in the sites of Norilsk

Methodology

- 1.** The current investigation involved sampling and analysing six sites to measure changes in the properties of new alloys. **2.** The sites were selected from the Norilsk area, which is located in the north of Russia and has been frequently used to distinguish the composition of different alloys.^{2,3,4}
- 3.** A total of 18 samples was collected and then analysed for their physical and chemical properties. **4.** Samples 1–9 were collected in thoroughly-rinsed 25 ml brown glass bottles which were filled to the top and then sealed tightly to prevent contamination.
- 5.** The filled bottles were shipped directly to two separate laboratories at MISIS University, where they were analysed using standard methods suitably miniaturised to handle small quantities of alloy material.⁵
- 6.** Samples 10–18 were prepared in our laboratory using a revised version of the smelting method established by the NNN Institute in France.⁶ **7.** This method obtains the desired alloy through the combination of different metals; the resulting alloy can be cooled and stored easily. **8.** The samples were subsequently shipped to NNN for analysis by X-ray diffraction (XRD). **9.** All tubing used was stainless steel, and although two samples were at risk of oxidation as a result of brief contact with air, variation among samples was negligible.

Find the words related to each section

Changes in the chemistry of alloys in the sites of Norilsk

Methodology

1. The current investigation involved sampling and analysing six sites to measure changes in the properties of new alloys. **2.** The sites were selected from the Norilsk area, which is located in the north of Russia and has been **frequently** used to distinguish the composition of different alloys.^{2,3,4}

4. Justify Choices Made

3. A total of 18 samples was collected and then analysed for their physical and chemical properties. **4.** Samples 1–9 were collected in thoroughly-rinsed 25 ml brown glass bottles which were filled to the top and then sealed tightly to prevent contamination.

5. The filled bottles were shipped directly to two separate laboratories at MISIS University, where they were analysed using standard methods suitably miniaturised to handle small quantities of alloy material.⁵

6. Samples 10–18 were prepared in our laboratory using a revised version of the smelting method established by the NNN Institute in France.⁶ **7.** This method obtains the desired alloy through the combination of different metals; **the resulting alloy can be cooled and stored easily.** **8.** The samples were subsequently shipped to NNN **for analysis** by X-ray diffraction (XRD). **9.** All tubing used was stainless steel, and although two samples were at risk of oxidation as a result of brief contact with air, variation among samples was negligible.

What else?

- because
- by doing..., we were able to
- **chosen for (+ noun)**
- chosen to (+ infinitive)
- for the purpose of (+ -ing or noun)
- in order to (+ infinitive)
- it was possible to (+ infinitive)
- offer a means of (+ -ing)
- one way to avoid

provide a way of (+ -ing)

selected on the basis of...

so as to (+ infinitive)

so/such that

thus (+ -ing)

to (+ infinitive)

which/this allows/allowed

More examples

- **To validate the results**, a series of control experiments **were conducted** under identical conditions to ensure the accuracy and reliability of the findings.

More examples

- In order to optimize the efficiency of the process, a novel catalyst **was introduced**, which minimised the reaction time by more than 50%.

More examples

- **Because of** the limited availability of the sample, a careful extraction technique **was employed** to maximize the yield and minimize any loss during the process.

More examples

- **Because** the temperature played a crucial role in the reaction kinetics, a precise temperature control system **was implemented** to maintain the desired reaction conditions.

Find the words related to each section

Changes in the chemistry of alloys in the sites of Norilsk

Methodology

- 1.** The current investigation involved sampling and analysing six sites to measure changes in the properties of new alloys. **2.** The sites were selected from the Norilsk area, which is located in the north of Russia and has been frequently used to distinguish the composition of different alloys.^{2,3,4}
- 3.** A total of 18 samples was collected and then analysed for their physical and chemical properties. **4.** Samples 1–9 were collected in thoroughly-rinsed 25 ml brown glass bottles which were filled to the top and then sealed tightly to prevent contamination.
- 5.** The filled bottles were shipped directly to two separate laboratories at MISIS University, where they were analysed using standard methods suitably miniaturised to handle small quantities of alloy material.⁵
- 6.** Samples 10–18 were prepared in our laboratory using a revised version of the smelting method established by the NNN Institute in France.⁶ **7.** This method obtains the desired alloy through the combination of different metals; the resulting alloy can be cooled and stored easily. **8.** The samples were subsequently shipped to NNN for analysis by X-ray diffraction (XRD). **9.** All tubing used was stainless steel, and although two samples were at risk of oxidation as a result of brief contact with air, variation among samples was negligible.

Find the words related to each section

Changes in the chemistry of alloys in the sites of Norilsk

Methodology

1. The current investigation involved sampling and analysing six sites to measure changes in the properties of new alloys. **2.** The sites were selected from the Norilsk area, which is located in the north of Russia and has been frequently used to distinguish the composition of different alloys.^{2,3,4}

3. A total of 18 samples was collected and then analysed for their physical and chemical properties. **4.** Samples 1–9 were collected in **thoroughly-rinsed** 25 ml brown glass bottles which were filled to the top and then **sealed tightly to prevent contamination**.

5. The filled bottles were shipped directly to two separate laboratories at MISIS University, where they were analysed using standard methods suitably **miniaturised** to **handle small quantities** of alloy material.⁵

6. Samples 10–18 were prepared in our laboratory using a revised version of the smelting method established by the NNN Institute in France.⁶ **7.** This method obtains the desired alloy through the combination of different metals; the resulting alloy can be cooled and stored easily. **8.** The samples were subsequently shipped to NNN for analysis by X-ray diffraction (XRD). **9.** All tubing used was stainless steel, and although two samples were at risk of oxidation as a result of brief contact with air, variation among samples was negligible.

5. Indicate that appropriate care was taken

What else?

Adjectives

- accurate
- identical
- frequent
- firm
- rapid
- tight

Adverbs

- accurately
- carefully
- directly
- both/all
- firmly
- frequently
- only
- rapidly
- repeatedly
- smoothly

More examples

Only a specific range of composition resulted in the desired alloy properties, highlighting the importance of **precise** control over the elemental ratios during the experiment.

Rapidly cooling the alloy samples using liquid nitrogen quenching allowed for the formation of a fine-grained microstructure, resulting in improved mechanical strength.

The experiment was **repeatedly** conducted using **identical** parameters to ensure the accuracy and reproducibility of the results.

The alloy samples exhibited a **smooth** surface finish due to the implementation of an **exact** polishing technique, facilitating **accurate** microstructural analysis.

Find the words related to each section

Changes in the chemistry of alloys in the sites of Norilsk

Methodology

- 1.** The current investigation involved sampling and analysing six sites to measure changes in the properties of new alloys. **2.** The sites were selected from the Norilsk area, which is located in the north of Russia and has been frequently used to distinguish the composition of different alloys.^{2,3,4}
- 3.** A total of 18 samples was collected and then analysed for their physical and chemical properties. **4.** Samples 1–9 were collected in thoroughly-rinsed 25 ml brown glass bottles which were filled to the top and then sealed tightly to prevent contamination.
- 5.** The filled bottles were shipped directly to two separate laboratories at MISIS University, where they were analysed using standard methods suitably miniaturised to handle small quantities of alloy material.⁵
- 6.** Samples 10–18 were prepared in our laboratory using a revised version of the smelting method established by the NNN Institute in France.⁶ **7.** This method obtains the desired alloy through the combination of different metals; the resulting alloy can be cooled and stored easily. **8.** The samples were subsequently shipped to NNN for analysis by X-ray diffraction (XRD). **9.** All tubing used was stainless steel, and although two samples were at risk of oxidation as a result of brief contact with air, variation among samples was negligible.

Find the words related to each section

Changes in the chemistry of alloys in the sites of Norilsk

Methodology

1. The current investigation involved sampling and analysing six sites to measure changes in the properties of new alloys. **2.** The sites were selected from the Norilsk area, which is located in the north of Russia and has been frequently used to distinguish the composition of different alloys.^{2,3,4}

3. A total of 18 samples was collected and then analysed for their physical and chemical properties. **4.** Samples 1–9 were collected in thoroughly-rinsed 25 ml brown glass bottles which were filled to the top and then sealed tightly to prevent contamination.

5. The filled bottles were shipped directly to two separate laboratories at MISIS University, where they were analysed **using standard methods** suitably miniaturised to handle small quantities of alloy material.⁵

6. Samples 10–18 were prepared in our laboratory **using a revised version of the smelting method established by the NNN Institute in France.**⁶ **7. This method** obtains the desired alloy through the combination of different metals; the resulting alloy can be cooled and stored easily. **8.** The samples were subsequently shipped to NNN for analysis by X-ray diffraction (XRD). **9.** All tubing used was stainless steel, and although two samples were at risk of oxidation as a result of brief contact with air, variation among samples was negligible.

**6. Relate materials/
methods to other studies**

What else?

1. **Exactly the same** as the one cited:

- according to
- as described by/in (+reference)
- as explained by/in
- as in
- as proposed by/in
- as reported by/in
- as reported previously

What else?

2. **Similar to** the one cited:

- a (modified) version of
- adapted from
- based in part/partly on
- essentially identical
- in line with
- in principle
- essentially the same

What else?

3. **Significantly different** from the one cited:

- a novel step
- in line with
- although in many ways similar
- loosely based on

More examples

- The experimental procedure involved **a novel step, adapted from a study by** Smith et al. (2020), where the alloy samples were subjected to a controlled heat treatment process.

More examples

- **In line with previous research**, the samples were prepared **as described in the work of** Johnson et al. (2018), **with slight modifications** to the composition to investigate the effect on mechanical properties.

More examples

- The alloy specimens were prepared using **a modified version of the casting method outlined by Brown et al. (2019)**, allowing for the precise control of alloy composition and the formation of desired microstructures.

More examples

- The heat treatment process, as described **in the work of Lee et al. (2017)**, was employed to achieve a specific phase transformation in the alloy, enhancing its mechanical properties.

Find the words related to each section

Changes in the chemistry of alloys in the sites of Norilsk

Methodology

- 1.** The current investigation involved sampling and analysing six sites to measure changes in the properties of new alloys. **2.** The sites were selected from the Norilsk area, which is located in the north of Russia and has been frequently used to distinguish the composition of different alloys.^{2,3,4}
- 3.** A total of 18 samples was collected and then analysed for their physical and chemical properties. **4.** Samples 1–9 were collected in thoroughly-rinsed 25 ml brown glass bottles which were filled to the top and then sealed tightly to prevent contamination.
- 5.** The filled bottles were shipped directly to two separate laboratories at MISIS University, where they were analysed using standard methods suitably miniaturised to handle small quantities of alloy material.⁵
- 6.** Samples 10–18 were prepared in our laboratory using a revised version of the smelting method established by the NNN Institute in France.⁶ **7.** This method obtains the desired alloy through the combination of different metals; the resulting alloy can be cooled and stored easily. **8.** The samples were subsequently shipped to NNN for analysis by X-ray diffraction (XRD). **9.** All tubing used was stainless steel, and although two samples were at risk of oxidation as a result of brief contact with air, variation among samples was negligible.

Find the words related to each section

Changes in the chemistry of alloys in the sites of Norilsk

Methodology

1. The current investigation involved sampling and analysing six sites to measure changes in the properties of new alloys. **2.** The sites were selected from the Norilsk area, which is located in the north of Russia and has been frequently used to distinguish the composition of different alloys.^{2,3,4}

3. A total of 18 samples was collected and then analysed for their physical and chemical properties. **4.** Samples 1–9 were collected in thoroughly-rinsed 25 ml brown glass bottles which were filled to the top and then sealed tightly to prevent contamination.

5. The filled bottles were shipped directly to two separate laboratories at MISIS University, where they were analysed using standard methods suitably miniaturised to handle small quantities of alloy material.⁵

6. Samples 10–18 were prepared in our laboratory using a revised version of the smelting method established by the NNN Institute in France.⁶ **7.** This method obtains the desired alloy through the combination of different metals; the resulting alloy can be cooled and stored easily. **8.** The samples were subsequently shipped to NNN for analysis by X-ray diffraction (XRD). **9.** All tubing used was stainless steel, and **although** two samples were **at risk of** oxidation as a result of brief contact with air, **variation** among samples **was negligible**.

7. Indicate where problems occurred

What else?

Minimising problem

- did not align precisely
- only approximate
- it is recognised that
- not perfect
- not identical

What else?

Minimising responsibility

- limited by
- inevitably
- necessarily
- impractical
- as far as possible

What else?

Maximising good aspects

- acceptable
- fairly well
- quite good
- reasonably robust
- however

What else?

Presenting Solution

- future work
should/will
- currently in
progress/underway

More examples

In this experiment on alloys, it was observed that the grain boundaries **did not align precisely with** the desired crystallographic orientations.

More examples

The alignment achieved **was only approximate**, limited by the inherent crystallographic complexities of the alloy system.

More examples

However, this level of alignment was deemed acceptable for the purposes of this study. **Inevitably**, the future work **should focus on** developing improved techniques to achieve **more precise** grain boundary alignment.

More examples

Currently underway are investigations into advanced processing methods that may allow for enhanced control over grain boundary orientations in alloy systems.

Summary

- Provide introduction and overview of the materials/methods
- Supply background information
- Present specific and precise details about materials/methods
- Justify choices made
- Indicate appropriate care taken
- Relate materials/methods to other studies
- Locate problems occurred and solutions