

## COE-C2004 - Materials Science and Engineering

### 2021-2022 Autumn II

**Case Study II, 01.11.2021**

#### Scientific article reading and summary

Search articles online in the focused research fields of **steel**, read, and write an essay to summarize the articles. There are two focused fields, as listed in Table 1, you shall pick up one topic/keyword from each of them. Then for each topic, select an article for intensive reading and summary. The selected articles can be mainly focused on or partly involving the picked topic/keyword. Besides, the selected articles shall be only from the given Journal list in the following. You are recommended to focus on the recent researches.

#### Journal list:

- Nature Reviews Materials (<https://www.nature.com/natrevmats/>)
- PROGRESS IN MATERIALS SCIENCE  
(<https://www.journals.elsevier.com/progress-in-materials-science>)
- NATURE MATERIALS (<https://www.nature.com/nmat/>)
- MATERIALS SCIENCE & ENGINEERING R-REPORTS  
(<https://www.journals.elsevier.com/materials-science-and-engineering-r-reports>)
- Annual Review of Materials Research (<https://www.annualreviews.org/loi/matsci>)
- ADVANCED MATERIALS (<https://onlinelibrary.wiley.com/journal/15214095>)
- Materials Today (<https://www.journals.elsevier.com/materials-today>)
- ACTA MATERIALIA (<https://www.journals.elsevier.com/acta-materialia>)

You can also find the scientific articles from the following Journal database: <https://www.sciencedirect.com/>, <https://scholar.google.fi/>. Please login with Aalto IP to obtain access.

Table 1 Interesting topics/keywords in **Steel** research.

Field 1	Field 2
Microstructure characterization	Microstructure effect on plastic deformation
Damage mechanism	Fatigue property evaluation
Strengthening mechanism	Additive Manufacturing techniques
Fracture mechanics	Strain rate effect on ductile fracture

#### Essay Requirements:

- **Group work is not allowed for Case Study 2. Please finish this task independently and submit your own report.**
- Summarize all contents in one PDF file, with naming 'CS2\_Firstname\_Surname.pdf'.
- One A4 page for one article. One topic/keyword from each field. In total, 2 pages for 2 selected articles. The template example and requirements are given in the CS2\_Wenqi\_Liu\_Template.docx.
- The focused material is **only STEEL**.
- Give the full citation information of the selected article.
- Attach the original PDF files of the selected articles.
- Directly copy and paste is not accepted. Summarize the article content in your own words.

*All information has been given above. As an additional case study to obtain extra points in the course, no more additional supports/resources would be given.*

**Due date: 18:00, 19.12.2021.**

**Contact: MyCourses 'General discussion' channel**