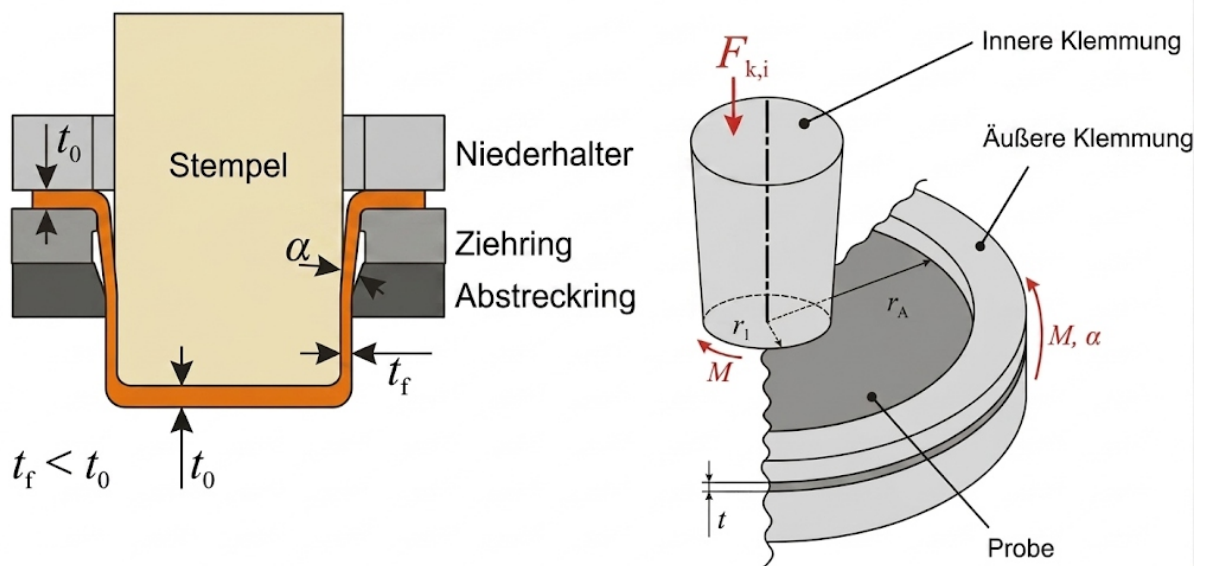


Numerische Modellierung des Abstreckgleitziehens von Feinstblechen mittels ebener Torsionsversuche

Die numerische Simulation des Abstreckgleitziehens von Feinstblechen erfordert aufgrund hoher Umformgrade präzise Materialdaten bei großen Dehnungen. Daten aus klassischen Zugversuchen müssen dafür durch annahmenbehaftete mathematische Extrapolationsansätze erweitert werden. Der ebene Torsionsversuch erlaubt dagegen die experimentelle Erfassung der realen Fließkurve bis zu sehr hohen Dehnungen.

Ziel dieser Arbeit ist die experimentelle Materialcharakterisierung mittels Zug- und ebenen Torsionsversuchen sowie die anschließende numerische Modellierung des Prozesses in LS-Dyna. Die so gewonnenen Daten gilt es zu nutzen, um den Einfluss präziser Fließkurven auf die Vorhersage von Prozesskräften zu analysieren. Die Arbeit wird in großen Teilen extern beim Projektpartner Novelis in Göttingen durchgeführt und vergütet.



Was ist zu tun?

- Bestimmung der Materialkennwerte
- Erstellung der Materialkarten
- Aufbau des Simulationsmodell
- Analyse der Einflussgrößen

Was solltest du mitbringen?

- Idealerweise Erfahrungen in der FEM-Simulation (LS-DYNA) und Python
- Grundlegende Kenntnisse im Bereich der Umformtechnik
- Selbstständige Arbeitsweise

**Ausschreibung
Masterarbeit ab:
Januar 2027**

TU Dortmund
Fakultät Maschinenbau
Institut für Umformtechnik
und Leichtbau
Prof. Dr. Yannis P. Korkolis

D-44227 Dortmund
Baroper Straße 303
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Ansprechpartner:

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Tel.: (0231) 755 - 6917

Position Overview:

About Novelis

Novelis' purpose is to shape a sustainable world together.

As a global leader in innovative products and services and the world's largest recycler of aluminum, we work with customers in the automotive, beverage can, aerospace, and specialties industries to deliver solutions that maximize the benefits of sustainable lightweight aluminum.

We have an integrated network of technically advanced rolling and recycling operations as well as foundries, with 31 plants in 9 countries across North America, South America, Europe, and Asia, and 13,250 employees worldwide. The company is headquartered in Atlanta, USA.

Our customers include some of the world's largest and most recognized brands, including Coca-Cola, Ford, BMW, Jaguar Land Rover, Airbus, Boeing, Nespresso, and Samsung. In addition, Novelis is a pioneer in sustainability and recycling within its industry.

Become part of our mission to shape a sustainable world and join us from January 2027 at our site in Göttingen as:

Master Thesis (m/f/d) in the field of Simulation & Material Characterization as a part of the DFG Transfer Project "Characterization of Thin Sheets Using the In-Plane Torsion Test"

Responsibilities & Qualifications

What you can expect:

- Support mechanical testing and material characterization.
- Analyze experimental data and prepare simulation input.
- Set up and evaluate finite element simulations.
- Compare simulation results with experimental observations.
- Document and present your findings.

How you convince us:

- Master's student in Mechanical, Materials, Computational Engineering, or a related field.
- Previous experience in numerical simulation (LS-Dyna preferred) and material modeling.
- Programming or data analysis skills are an advantage.
- Independent, curious, and structured working style.

What Novelis offers you:

#innovation: An internship with the global pioneer in technology and sustainability in the future market of aluminum processing and recycling, with the opportunity to actively contribute to innovative projects and help shape the future

#variety: Look forward to diverse tasks in an internationally operating company. With us, you can gain insights into different areas and develop your talents in a dynamic environment

#compensation: You will receive a fixed internship compensation for your commitment — valuable recognition of your work

#leisure: Your work-life balance is important to us. With a 35-hour work week, flexible working hours, and flextime, you have enough room for personal activities and relaxation

#goodies: Novelis is a member of Corporate Benefits and benefits-me. Benefit from attractive shopping advantages from well-known providers in various areas

Have we sparked your interest?

Please send a brief application or any questions regarding the position to:

Christopher Horstmann, M.Sc.

TU Dortmund University

Institute of Forming Technology and Lightweight Components (IUL)

MB 3, Room 4.026

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