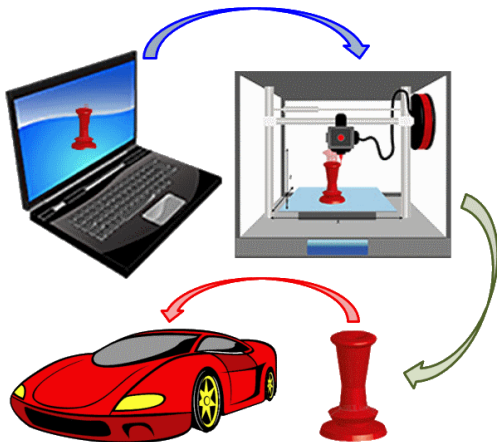


1st Winter School on
*Trends on Additive Manufacturing
for Engineering Applications*

Personal Introduction and Research Activity



Tamas KRAUSZ
PhD Student

Brief Introduction

- ▶ Background:
 - ▶ BSc in Mechanical Engineering – Politehnica University of Timisoara, Faculty of Mechanics, 2016
 - ▶ MSc in Medical Engineering – *Implants, prostheses and biomechanical evaluation* - Politehnica University of Timisoara, Faculty of Mechanics, 2018
 - ▶ PhD student – 2018 – ongoing - Politehnica University of Timisoara, Faculty of Mechanics, Mechanics and Strength of Materials Department
 - ▶ Supervisor: Prof. Dr. Eng. Liviu **MARȘAVINA**
- ▶ Occupation:
 - ▶ Mechanical Simulation (FEA) Engineer at *Continental Automotive Romania* – since 2016
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Brief Introduction

A METHODOLOGY FOR ESTIMATING DURABILITY OF AM50 MAGNESIUM ALLOY STEERING WHEELS

LIVIU MARȘAVINA, TAMÁS KRAUSZ, LIVIU PÎRVULESCU, LUCIAN RUSU

Abstract. Magnesium alloys have been widely spread in the automotive industry by their advantage: good mechanical properties, lightweight structure thanks to magnesium's low density. This paper proposes a methodology to estimate durability of a magnesium alloy AM50 steering wheel. The methodology is based on experimentally determined mechanical and fatigue properties and numerical simulation. The methodology was validated for two types of specimens against experimental fatigue data, and then applied to a steering wheel under torsion, respectively bending loading.

Keywords: magnesium alloy, stress concentration, durability.

Romanian Journal of Technical Sciences - Applied Mechanics

Boards Aims & scope For authors Submission Review procedure Ethics Subscrip

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Field of Research

- ▶ PhD Thesis focusing on - ***Mechanical Characterization of Polycarbonate Composites Frequently Used in Interior Automotive Products***
- ▶ Chosen materials for investigations:
 - Makrolon 2405 – unreinforced PC
 - Makrolon 9415 – PC + 10% glass fiber
 - Makrolon 8035 – PC + 30% glass fiber
- ▶ **Motivation:**
 - ▶ Injection molded thermoplastic materials frequently used in interior automotive products: *Cluster Instruments, Head-Up Displays, Infotainment Systems etc.*
 - ▶ Products subjected to quasi-static, dynamic (sinusoidal/random vibrations, mechanical shocks) and thermal loads
 - ▶ FEM simulations supporting product development
 - ▶ **Issue: missing or not available material data**

Field of Research

► Objectives/Goals:

- Determination of material parameters by experimental testing:
 - Tensile testing at various strain rates (2 mm/min - 400 mm/min / 0.00028 s⁻¹ - 0.056 s⁻¹) and temperatures (between -40° C and 85° C)
 - Impact testing (Charpy-impact)
 - Tensile fatigue testing
- Development of elasto-plastic (isotropic hardening/viscoelastic) material models

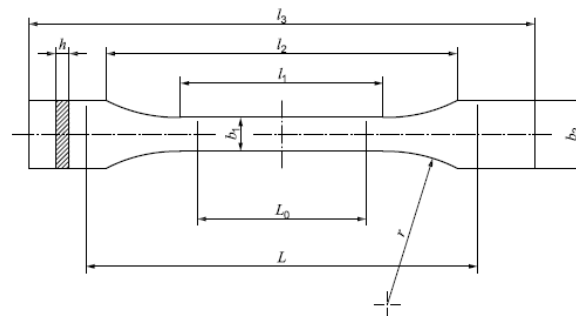
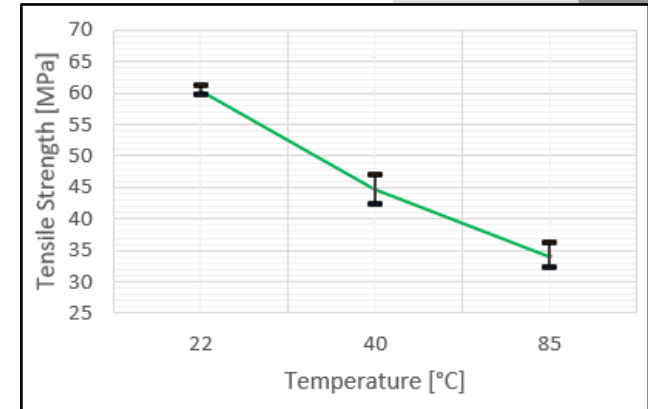
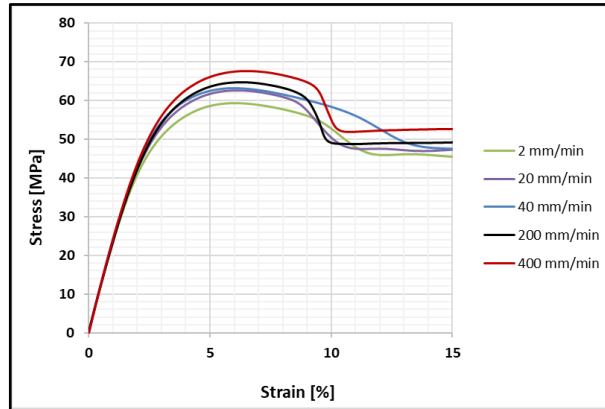


Figure 1 — Type 1A and 1B test specimens



Field of Research



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The effect of strain rate and temperature on the mechanical properties of polycarbonate composites

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