

**KOÇ UNIVERSITY
ADVANCED MATERIALS GROUP**

Demircan Canadıncı, PhD

Professor, Department of Mechanical Engineering
Koç University, İstanbul 34450 Turkey

Horizon Europe
2020-2021

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Background and Education

Currently: Professor of Mechanical Engineering

BS (06/2000) Mechanical Engineering, Middle East Technical University (Turkey)

MS (12/2001) Mechanical Engineering, University of Illinois at Urbana-Champaign (USA)

PhD (12/2005) Mechanical Engineering, University of Illinois at Urbana-Champaign (USA)

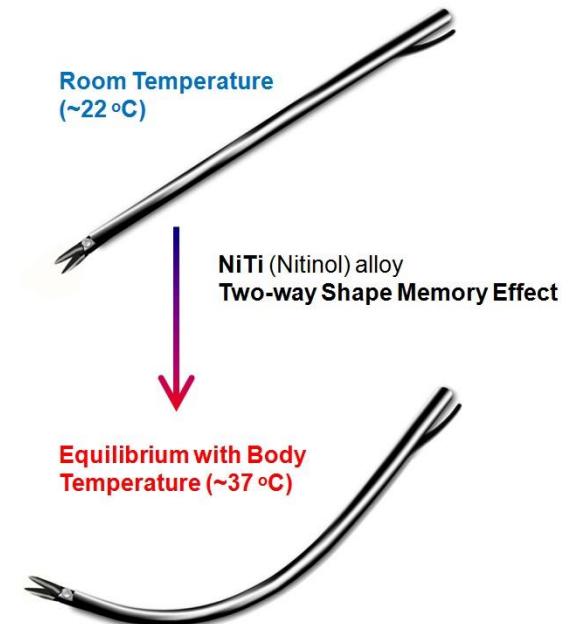
Post-doctorate Research Associate (01-12/2006) Materials Science, University of Paderborn (Germany)

Post-doctorate Research Associate (01-08/2007) Mechanical Science and Engineering, University of Illinois at Urbana-Champaign (USA)

Research Interests

- **Multi-scale experimental and computational mechanics of materials**

- Alloy Design with Artificial Intelligence and Machine Learning
- High-Entropy Alloys
- Superalloys
- New-generation high-strength steels
- Shape memory alloys
- Biomedical Alloy Design for
- Orthopedic Implants
- Fatigue and failure of metallic materials
- Crystal plasticity
- Finite element analysis



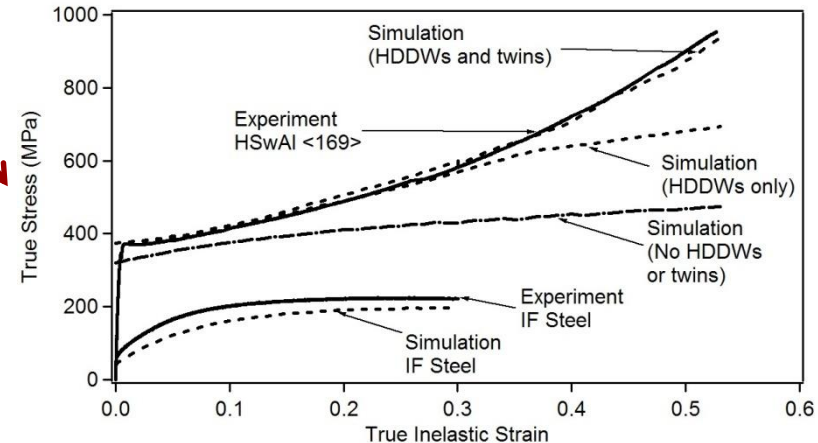
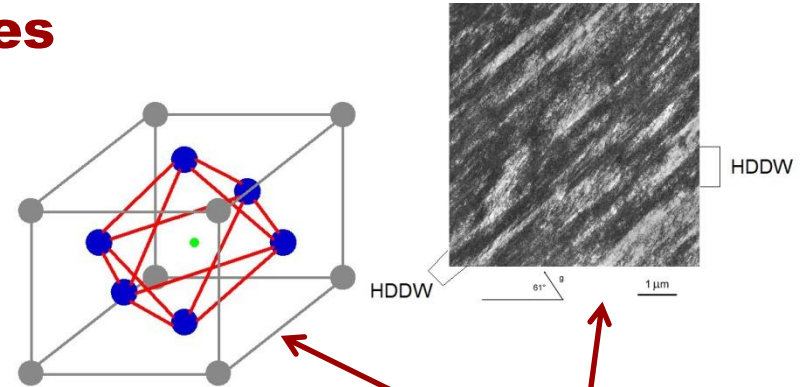
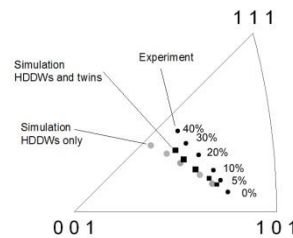
- **Advanced Materials Group at Koç University**

- **More than 100 scientific articles in peer-reviewed journals**

- **3 patents in the field of minimally invasive gastrointestinal surgery**

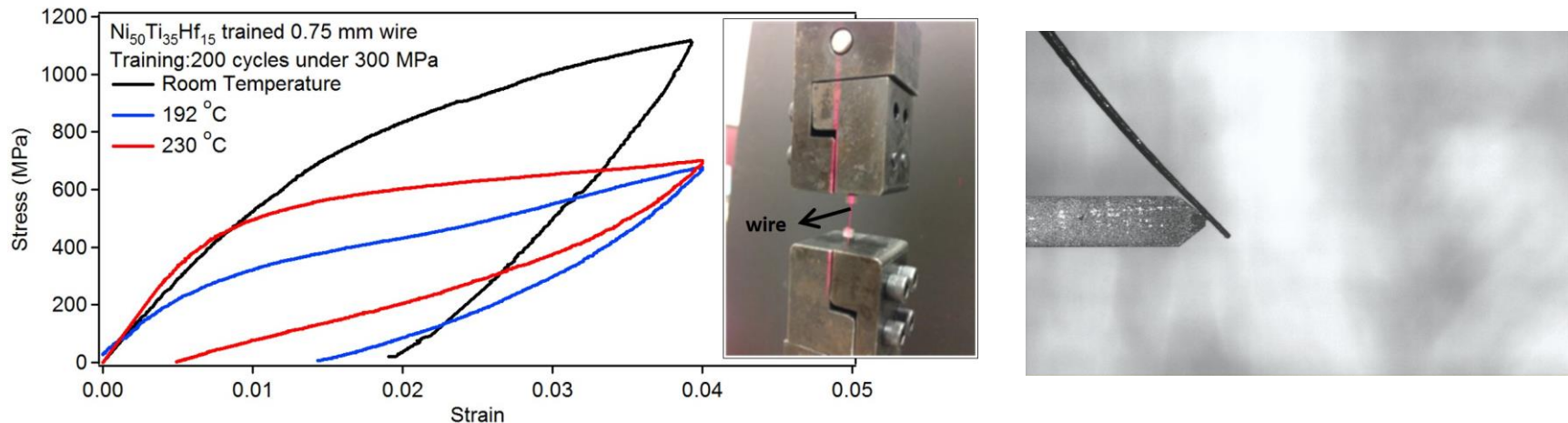
Infrastructure and Capabilities

- Nano-indentation
- Multi-axial fatigue testing frame
- XRD
- SEM / EDX
- FIB
- TEM
- XPS
- ICP-MS
- PVD coating
- Charpy Impact Tester
- Surface metallurgy / preparation
- Static biocompatibility testing
- Thermo-mechanical treatment / processing capability



Potential Project Topics

- Coating of metallic materials / metal-on-metal coatings
- Alloy design for aviation applications
- Modeling of material / component processing
- Microstructure engineering and modeling
- Multi-scale modeling of material behavior / component performance (molecular dynamics – crystal plasticity – FEM)
- Alloy design by artificial intelligence and machine learning



Dr. Canadiç's Potential Contributions

- Production of experimental data on thermo-mechanical and chemical properties of metallic materials utilizing various characterization techniques
- Data production for deformation behavior of metals utilizing multi-scale simulations
- Developing alloy design strategies utilizing machine learning techniques
- Validation of novel alloy development efforts through experiments and simulations