Thermal Measurements in Two-Phase Systems

Overview and practical examples from the doctoral period

Dr. Alekos I. Garivalis, PhD

Often, one of the first tasks of a novice PhD student is to deal with or set-up an apparatus to perform measurements. A considerable amount of time is spent on connecting the sensors, programming the acquisition software and learning how an instrument works. Furthermore, making experimental research requires a good confidence with errors management and a minimal practice with signals and electronic devices.

Going over the direct experience of a recent graduate Ph.D. student, the course provides the attendees with basic knowledge on how deal with measurements, with specific focus on thermal measurement of two-phase systems (boiling, evaporation etc…). Examples and technical specification of acquisition boards commonly used in laboratory are addressed. The LabView environment is presented as a powerful acquisition and control tool. A special focus is dedicated to thermal measurements (temperature and heat flux), giving an overview of the contact, without contact and inverse techniques in two-phase systems.

Programme of the course:

1. **Basics of data acquisition and digitalization: 2 hours, November 17, 2022 9:00-11:00**
    a) Schematic of a basic acquisition system
    b) Digitalization
    c) Examples of LabView and Arduino codes
2. **Thermal measurements with examples: 2 hours, November 17, 2022 11:30-13:30**
    a) Measurements with contact
    b) Measurements without contact
    c) Hints on inverse techniques