Announcement of a new metrology textbook

The book *An Introduction to Metrology* by Rein Laaneots and Olev Mathiesen is intended to be a textbook for metrology courses on post-secondary level and should be an invaluable tool for the practitioner.

The book contains basic and essential facts on measurement. Starting from a presentation of the concepts of physical quantity, the value of a physical quantity and unit of measurement, the authors discuss measurement as a process that has the object of determining a value of a quantity. Measurands are treated as stochastic variables, and a theoretical model for the measurement result as an estimate of the value of the measured quantity is presented. The reliability of measurement results is discussed thoroughly; in particular, uncertainty of measurement and its estimation. In this connection, an account is given of relevant parts of mathematical statistics and the propagation of uncertainty of measurement. Separate sections deal with comparison and presentation of the results of measurement, properties of measuring instruments and their calibration and with the international metrological infrastructure.

Practical use of the described methods is illustrated by numerous examples. The terminology used, and the approach to uncertainty of measurement, are fully in line with the recommendations given in VIM and in GUM.

Packed to the book is an educational version of the Metrodata GmbH tool for uncertainty analysis, GUM Workbench, together with the data files resulting from the use of the program on some of the examples discussed in the book.

Outline of chapters
1. Quantities and units - 20 pages
2. Fundamentals of measurement theory - 26 pages
3. Dispersion and uncertainty - 16 pages
4. Quantities in the measurement model. Evaluation of the value and uncertainty of a quantity - 13 pages
5. Evaluation of the value of the output quantity and propagation of uncertainty of measurement in the measurement model - 32 pages
6. Variance and regression analysis of results of measurement - 28 pages
7. The result of measurement and decisions based on it - 24 pages
8. Measuring instruments, their categories and general characteristics - 26 pages
9. Calibration of measuring instruments - 22 pages
10. International and European metrology organisations - 14 pages

Authors:
Rein Laaneots, DSc Eng,
Professor of Chair of Metrology and Measurement Technique,
Tallinn University of Technology,
Estonia

laaneots@staff.tlu.ee

Olev Mathiesen, PhD in Physics,
Retired from SWEDAC,
the Swedish Board for Accreditation and Conformity Assessment, Sweden

olev@bornet.net

For detailed information, excerpts and ordering, please visit http://www.la-ma.se