1. Main research activities in fundamental thermometry and to improve the dissemination of the kelvin

- Determination of the Boltzmann constant by Acoustic Gas Thermometry (ppm level).
- Development of micro-scale photonic thermometers and their associated calibration systems.
- Measurement of $T-T_{90}$ in the range from 420 °C to 960 °C by primary radiation thermometry.
- Measurement of the thermodynamic temperature of fixed points for radiation thermometry.
- Construction of fixed points (Al, Cu and M-C eutectics) for radiation thermometry.

2. Main research activities in environment

- Coordination of the EMPIR project “Increasing the comparability of extreme air temperature measurements for meteorology and climate studies” (COAT)
- Development of a new technique to perform traceable temperature measurements of the sea water column and sea water surface based on optical fiber Bragg gratings.
- Contribution to WMO siting classification schemes by studying the building influence on air temperature measurements.
- Study of the sources of uncertainty linked to air temperature measurements.
- Development of procedures and protocols for the validation and calibration of non-catching precipitation gauges.

3. Main research activities in industry applications

- Development of traceable optical methods to measure temperature and gas concentration in a flame.
- Development of optimal Pt-Rh thermocouples for temperatures above 1100 °C.
- Development of traceable fibre-optic thermometry.

4. Key publications 2017-2020

- Report on the comparison of the calibration of noble metal thermocouples from 419 °C up to 1100 °C (EURAMET.T-S5). Dolores del Campo, Carmen García Izquierdo,


• Updated determination of the molar gas constant R by acoustic measurements in argon at UVa-CEM. J J Segovia, D Lozano-Martín, M C Martín, C R Chamorro, M A Villamañán, E Pérez, C García Izquierdo and D del Campo; Metrologia 00 (2017) 1–11


