

**Consultative Committee for Photometry and Radiometry (CCPR)**  
25th Meeting (on-line 10-11 May 2022)

**CCPR member report on activities in radiometry and photometry since the last  
CCPR meeting (2019)**

**Reply from: Center for Measurement Standards (CMS)**

**Delegate: Kuei-Neng Wu**

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1. Summarize the recent progress in your laboratory with respect to measurement standards, research projects, and metrology services to fulfill the demands of customers in:
    - (a) broad-band radiometric quantities:
    - (b) spectral radiometric quantities:  
Updating spectral responsivity calibration system by using plasma light source.
    - (c) photometric quantities:  
Realization of detector-based luminous intensity and illuminance responsivity scales from cryogenic radiometer.
    - (d) other area(s) relevant to CCPR:
      - 1) Development of pulsed, high power LED and VCSEL measurement. High power LEDs and VCSELs are typically operated in pulsed mode, while related photometric quantities were calibrated in CW mode. Researches project are studied to measure optical property and light distribution of high power LEDs and VCSELs with pulsed operation.
      - 2) Development of applicability of DIN 5036-3 on Transmittance Haze Measurement.
      - 3) Development of EUV spectral responsivity calibration for semiconductor industry.
      - 4) Development of measurement system for key parameters of UV-C LED.
      - 5) Development of AI-LiDAR based people flow management system for prevention of COVID-19.
      - 6) Development of Mode-locked fiber laser comb which contains one laser oscillator with repetition rate  $\geq 250$  MHz.
  2. What work in PR has been/will be terminated in your laboratory, if any, in the past /future few years? Please explain the reasons and provide the name of the institution if it has been/will be substituted by a DI or accredited laboratory.  
  
None
  3. Summarize the Capacity Building and Knowledge Transfer activities undertaken by your institute in photometry and radiometry (courses, training, ...):

CMS is providing training courses in photometry and radiometry to industrial customers, normally once per year.

CMS support CIE Chinese Taipei activities in photometry and radiometry field. Such as UVC LED measurement, micro-LED, smart lighting. For ex, CMS held an on-line conference “Advanced UV for life” to promote UV disinfection technologies and safety awareness.

4. Summarize the research projects currently performed within a collaboration with one or more NMIs or Dis (name of the project, participants):

None

5. Are there any other research projects where you might be looking for collaborators from other NMIs or are there studies that might be suitable for collaboration or coordination between NMIs?

Radiometry for remote sensing and net zero-related topics.

6. Have you got any other information to place before the CCPR in advance of its next meeting?

None

7. Bibliography of radiometry and photometry papers of your laboratory since the last CCPR (September 2019):

Wen-Chun Liu and Hsueh-Ling Yu, Applicability of DIN 5036-3 to Transmittance Haze Measurement, Journal of Physics: Conference Series, Volume 2149, 012011, 14th International Conference on New Developments and Applications in Optical Radiometry (NEWRAD 2021) 21-24 June 2021, NIST, Boulder, USA

Wen-Chun Liu et al, “Transmittance Haze Measurement by DIN 5036 Part 3,” OPM\_OR\_007, NEWRAD 2021

Shau-Wei Hsu, Cheng-Hsien Chen, Kuei-Neng Wu and Shao-Tang Hung, On-Site Measurements of Reflection Characteristics of a Dry Asphalt Road, NewRad 2021.

Yi-Jan Huang , Yu-Chan Guan, Jin-Long Peng , Jow-Tsong Shy , and Li-Bang Wang, Precision laser spectroscopy of the  $2^1S_0 - 3^1D_2$  two-photon transition in  $^3\text{He}$ , Physical Review A101, 062507 (2020)

Shao-Tang Hung, Bao-Jen Pong, Chih-Hsuan Sun, Bing-Lin Ho, Curved Characteristic and Flicker Interaction Effect of Flexible Displays, IDMC 2022.