Sep.05.2016

JLMA Position Paper on Colour Rendering Index

CIE CRI (Ra, Ri) is the only standard of colour rendering of light sources at the moment. Ra has been used in many countries since the first publish from CIE in 1965. The newest publish is CIE 13.3 “Method of Measuring and Specifying Colour Rendering Properties of Light Sources”. JIS Z 8726 also refers CIE standard(JIS refers the 2nd edition CIE13.2).

Ra represents colour fidelity. Ra is calculated from the colour shift between chromaticitiy under test illuminant and standard illuminant on the CIE 1964 uniform colour space.

As GLA (Global Lighting Association) points out[1)], some manufacturers have already identified the demerits of the current Ra metric. They have started to use what amounts to an ‘extended version’ of Ra, by supplementing Ra with R9, or using Ra14 (which uses 14 colours instead of eight). Despite significant research effort over previous years on colour fidelity, there is no internationally approved standard that rates the new colour rendering properties of a light source.

CIE Technical Committee TC1-90 is already developing a new colour fidelity metric (Rf) as one colour rendering properties of a light source.
Rf has been proposed by IES (Illuminating Engineering Society of North America) as one index in Technical Memorandum TM-30-15, and it is calculated by using the newest colour space, colour adaptation model, colour sample set and so on. So Rf is based on the state of art.
But as Lighting Europe (LE) and National Electric Manufacturers Association (NEMA) express statements not to support changing Ra with Rf[2), 3)].

IES who proposes Rf to CIE TC1-90 also mentions that TM-30-15 will enable the international lighting community to carefully evaluate it, providing a path leading to improved colour fidelity and design guidance. Technical analysis and feedback regarding the method described in TM-30 will be critical to continued development and standardization of color quality metrics. Moreover, it is mentioned that IES does not endorse any mandatory color rendering measures in energy regulations until there is a national or international consensus regarding an appropriate metric and range of values[4)].
And CIE also mentions Ra will not be officially replaced until a new metric is widely accepted[5)].

Japan Lighting Manufacturers Association (JLMA) appreciates Rf as a result of newest studies. And JLMA welcomes to publish a Technical Report as a base to study Rf itself more and to study the possibility of applying Rf to industry. But JLMA thinks of Rf as a new index with some issues, and changing Ra with Rf is too early.

<About Japan Lighting Manufacturers Association>

JLMA is a grouping of 199 Companies or Organizations and over JP¥ 950 billion annual sales.

<References>

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2) LightingEurope Position Paper on Color Quality, LE, 2014.10.6
http://www.lightingeurope.org/uploads/files/LightingEurope_position_paper_on_color_quality_06102014.pdf
3) A NEMA Lighting Systems Division Position Paper on IES TM-30-15, LSCR-PP 1-2015, “Light Source Color Rendition”, NEMA Luminaire Section, 2015.11.12
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5) CIE Position Statement on CRI and Colour Quality Metrics, CIE, 2015.10.15
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