Optical and Thermal Characteristics of Colour Sensors for usage in multichannel LED Luminaires

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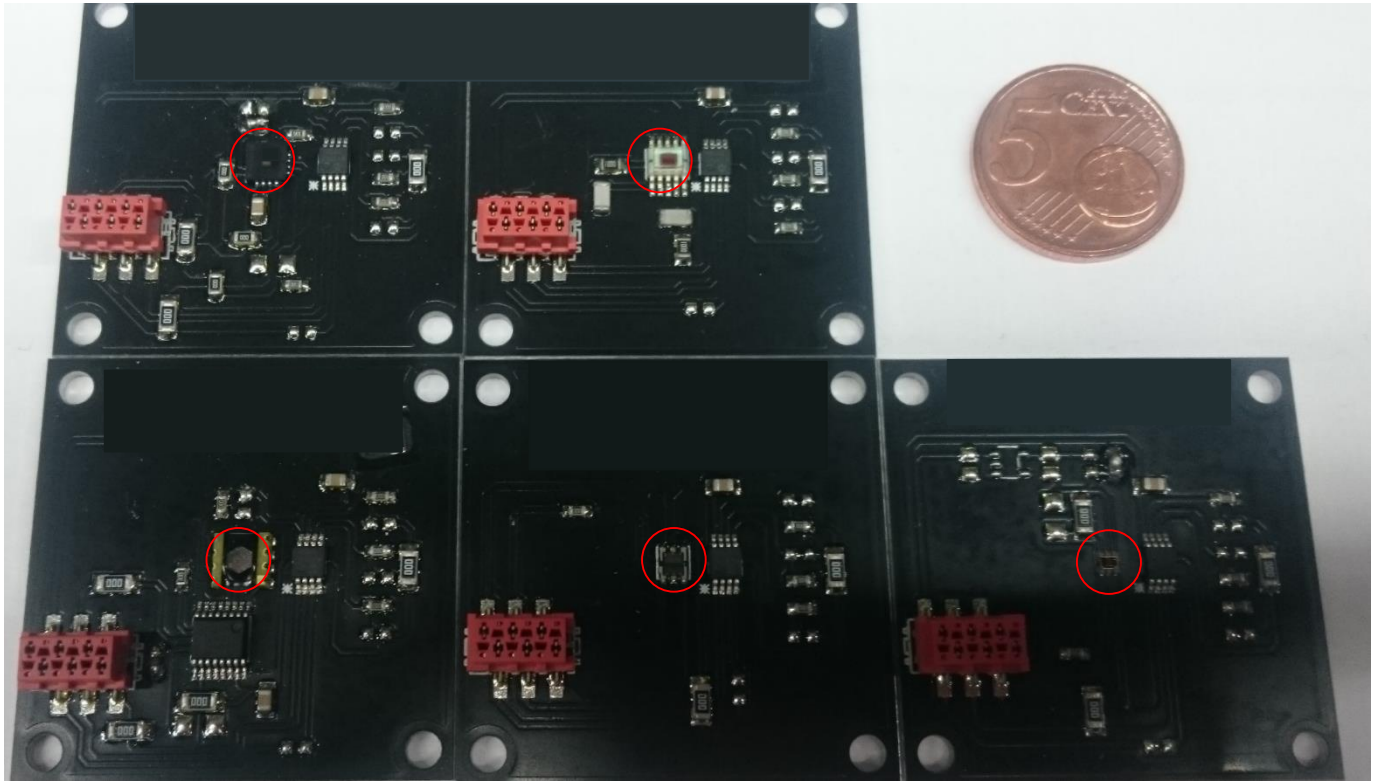
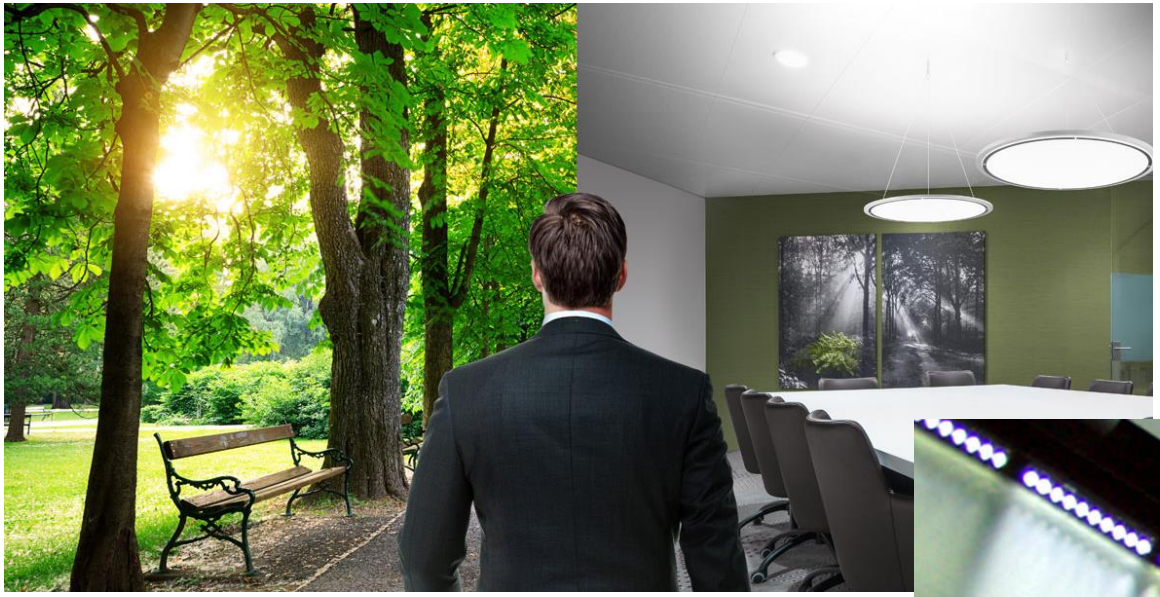
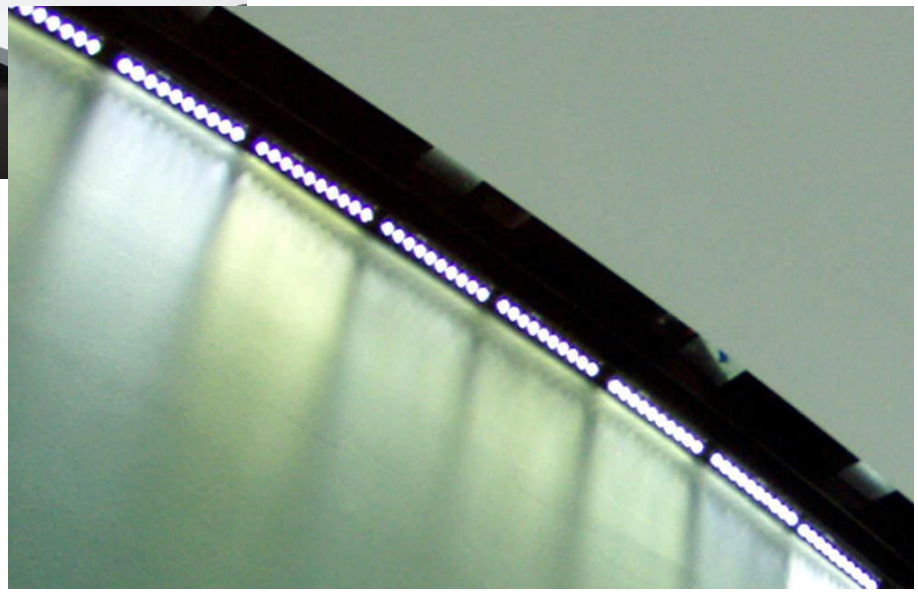
FACHGEBIET LICHTTECHNIK



Motivation



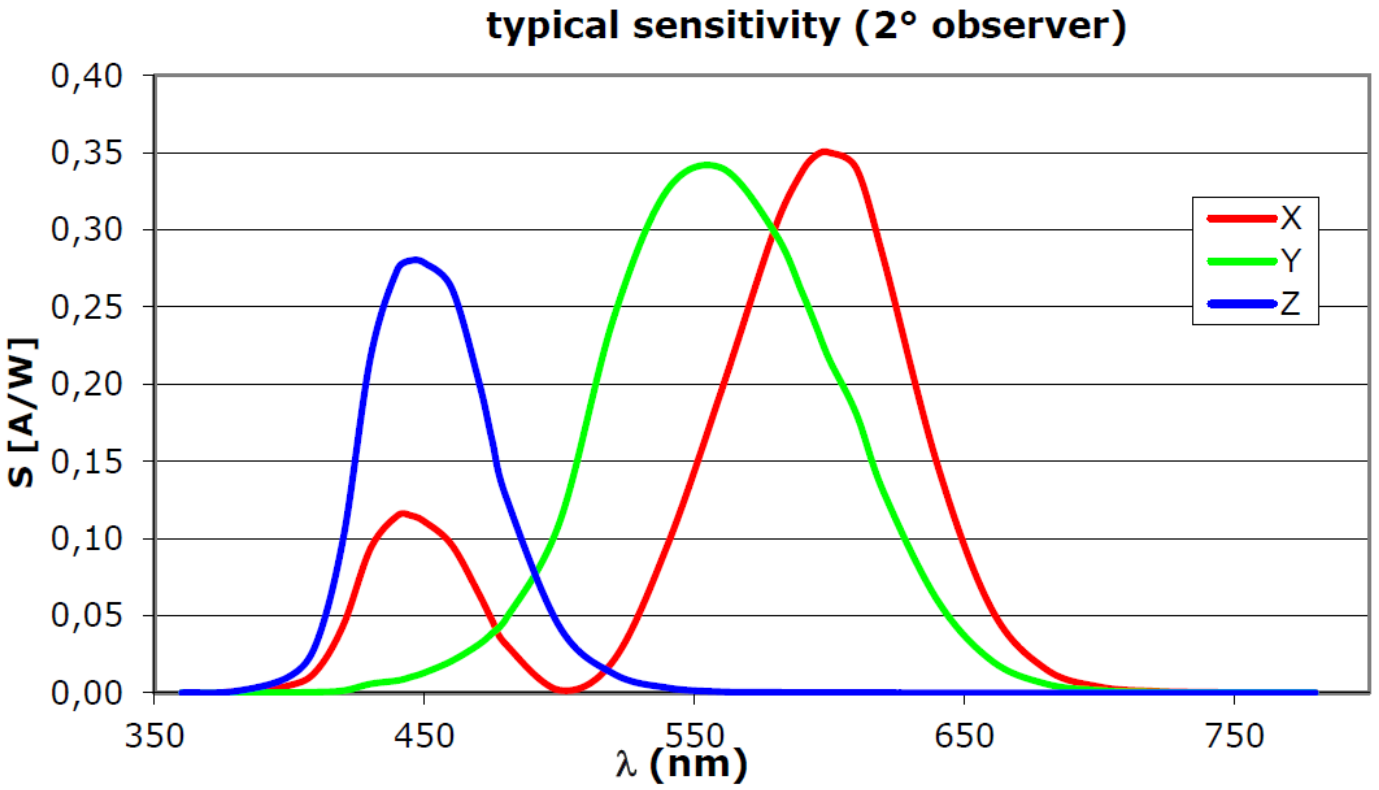
Human-Centric-Lighting [2]



Ageing resistant luminaires[2]

[1] https://www.trilux.com/fileadmin/user_upload/Human-Centric-Lighting_11.jpg
[2] http://www.elektronikpraxis.vogel.de/opto/articles/156687/

Datasheet Sensitivities



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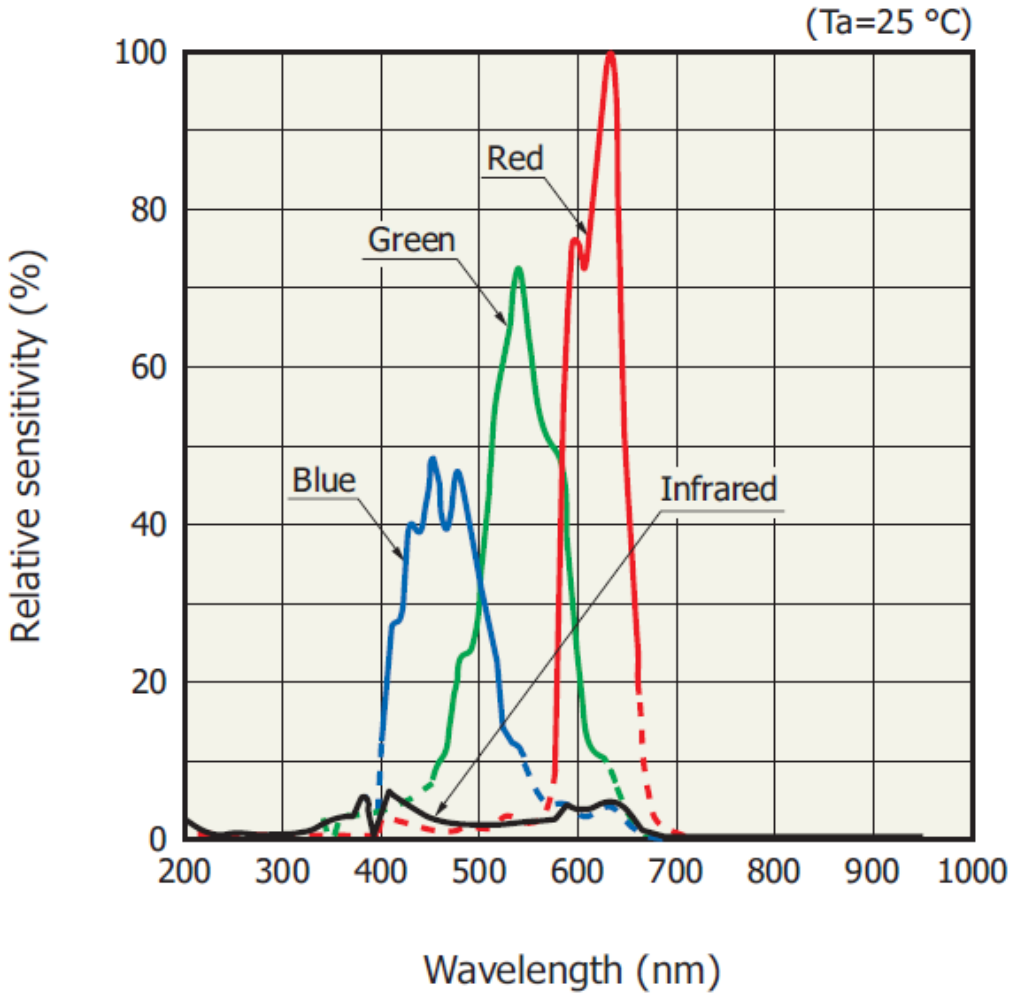

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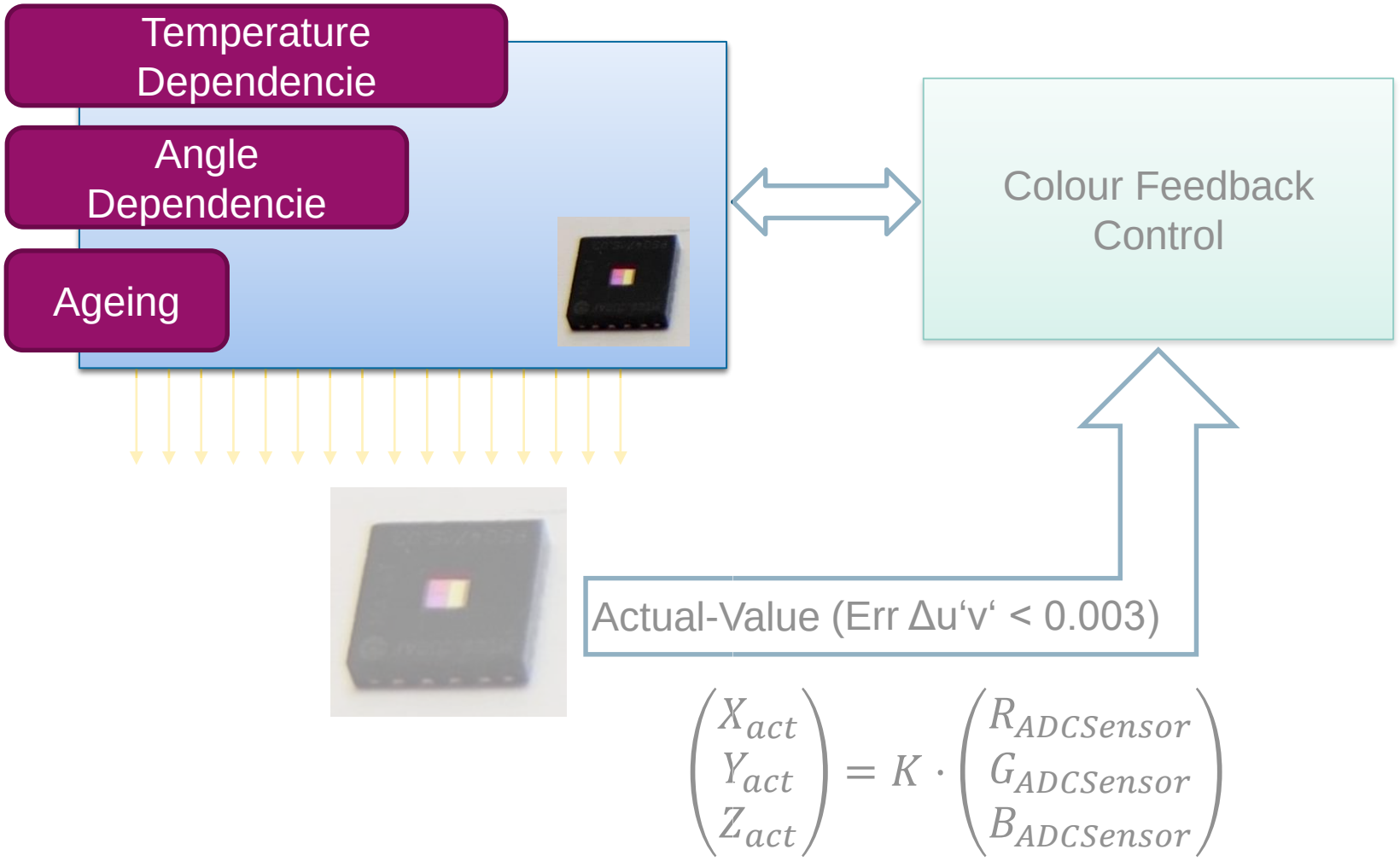
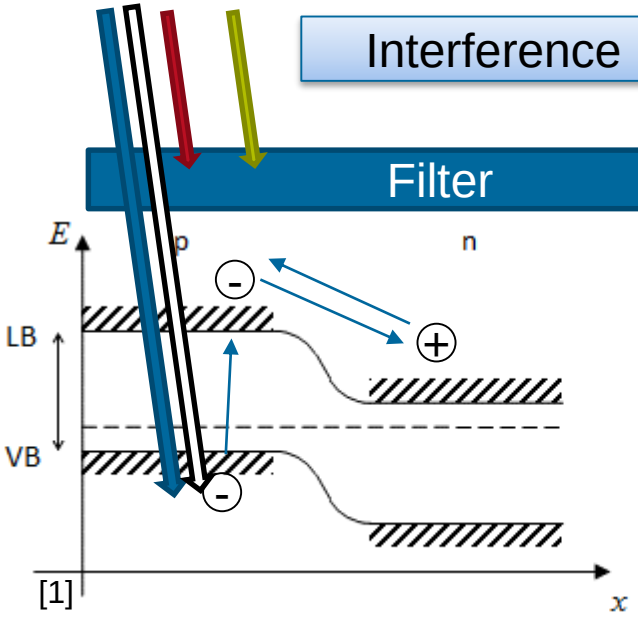
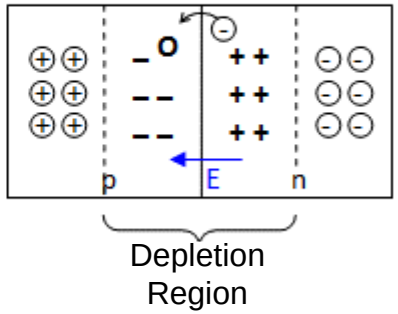


$$\begin{pmatrix} X_{act} \\ Y_{act} \\ Z_{act} \end{pmatrix} = K \cdot \begin{pmatrix} R_{ADCSensor} \\ G_{ADCSensor} \\ B_{ADCSensor} \end{pmatrix}$$

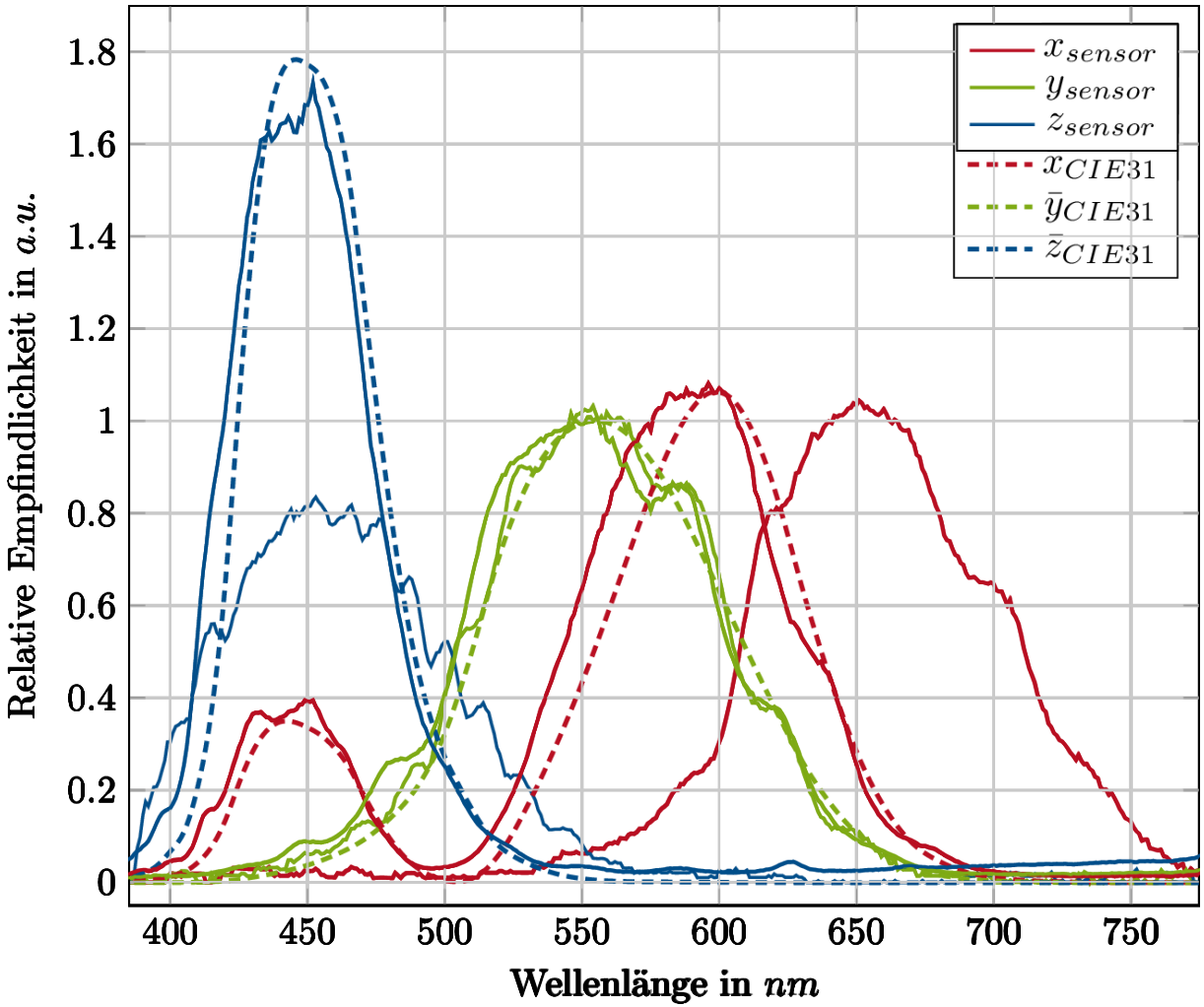
Colour Sensor Principles



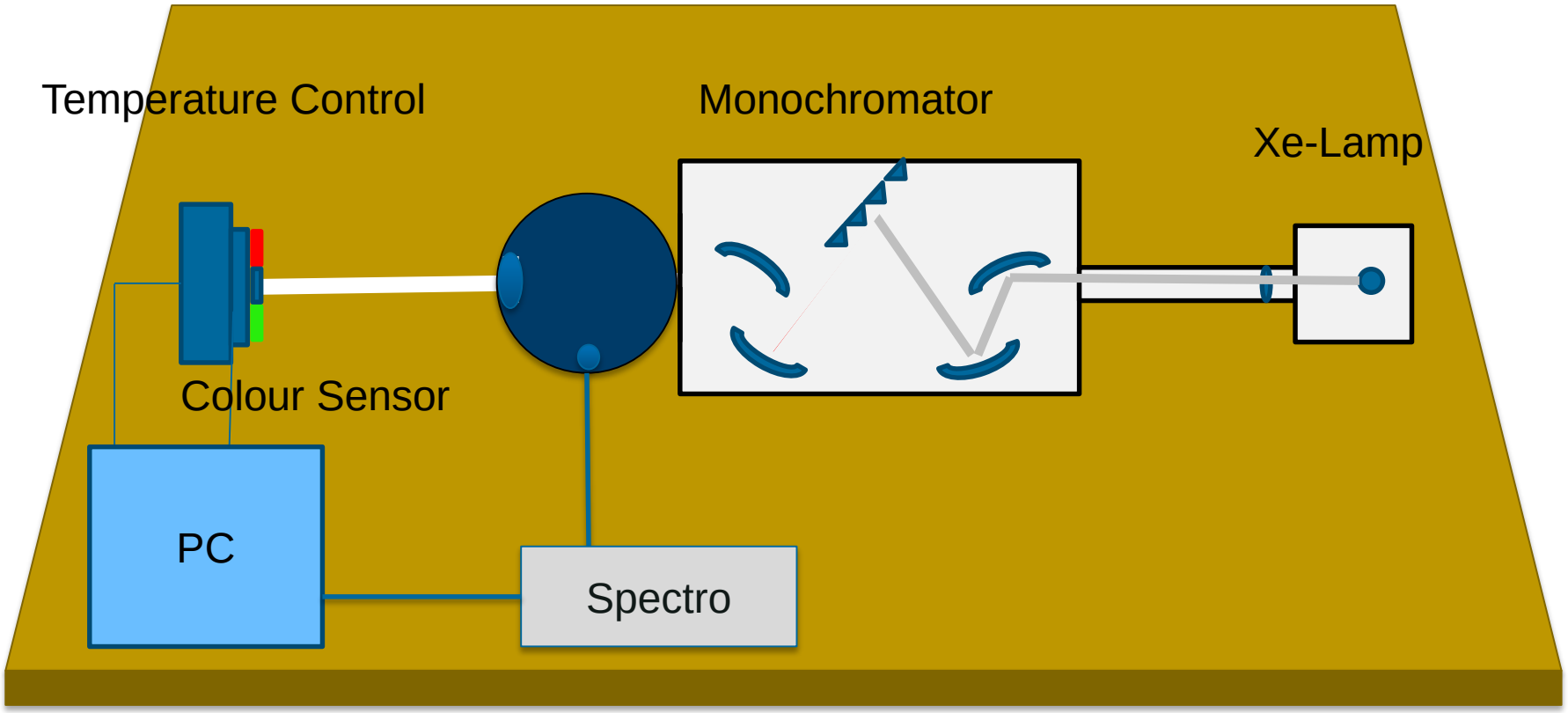


[1] http://me-lrt.de/u-07-1-silizium-photodiode

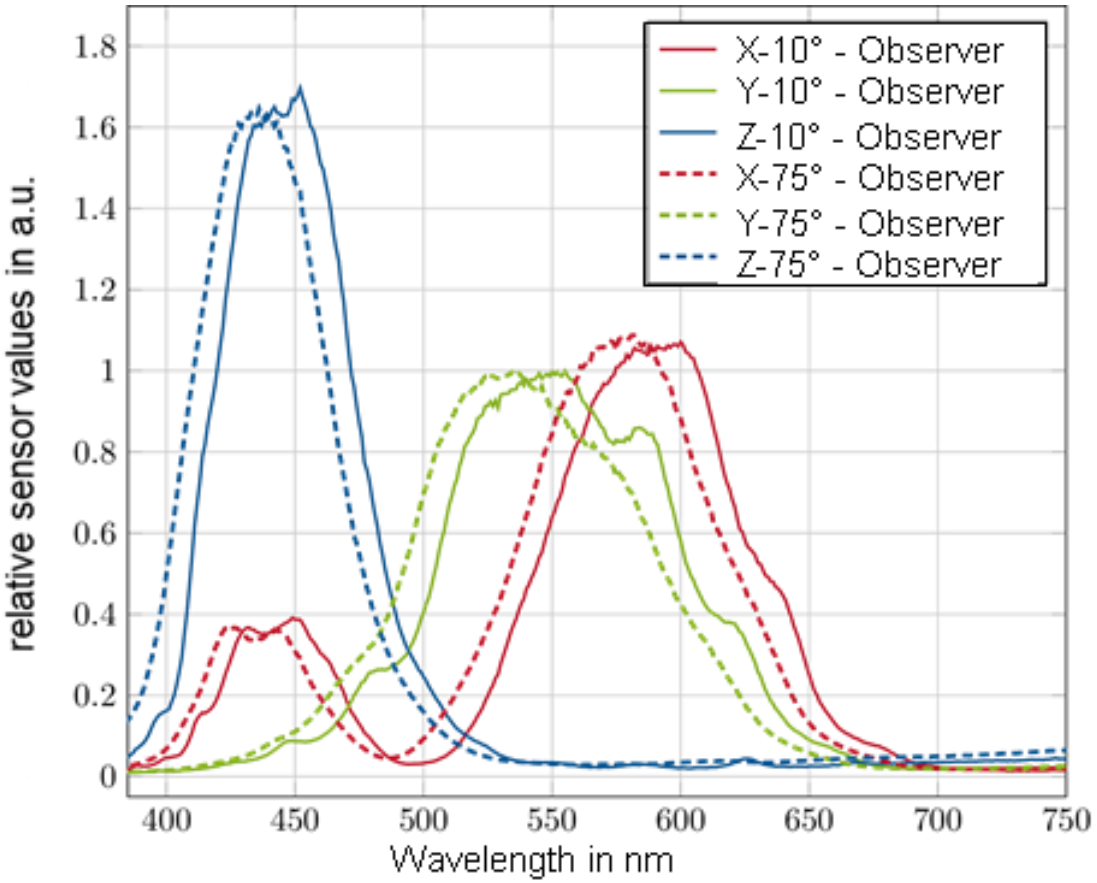
Colour Sensor Types Comparison



Colour Sensor Characterization Setup



Angle Dependencie for Interference Filters



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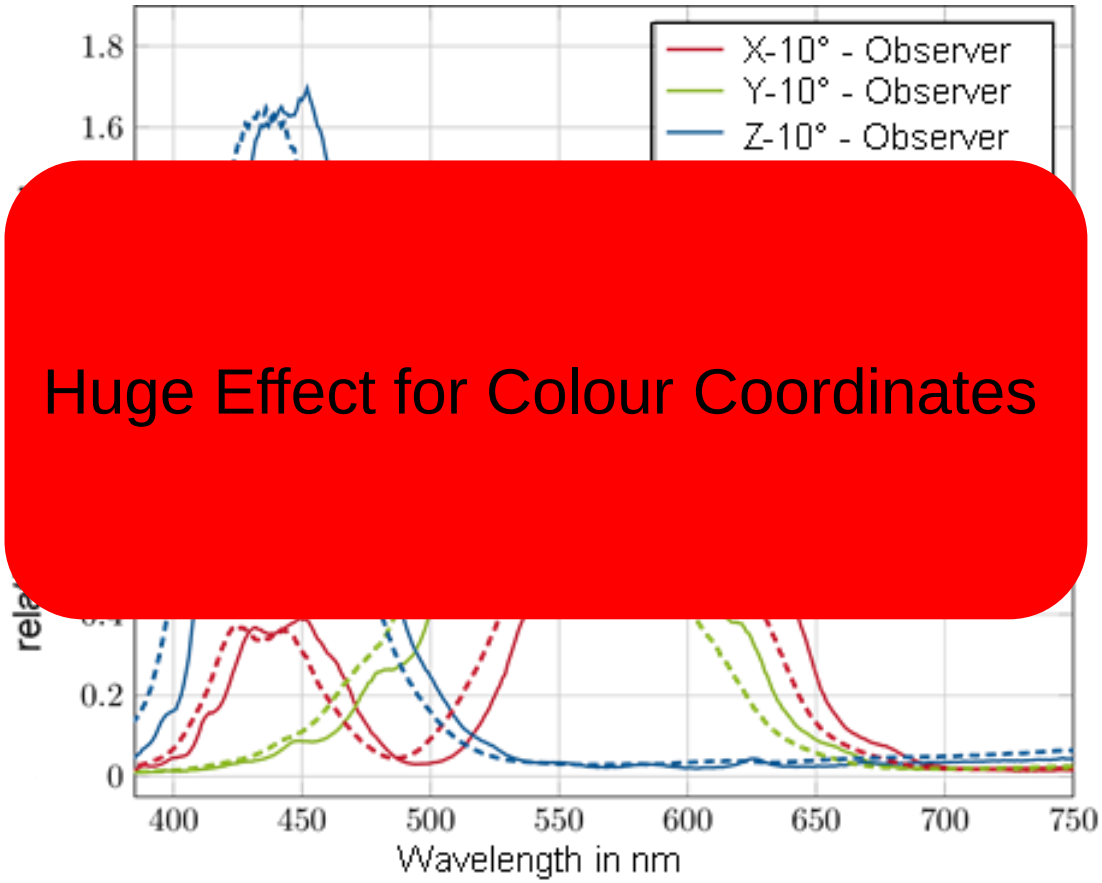
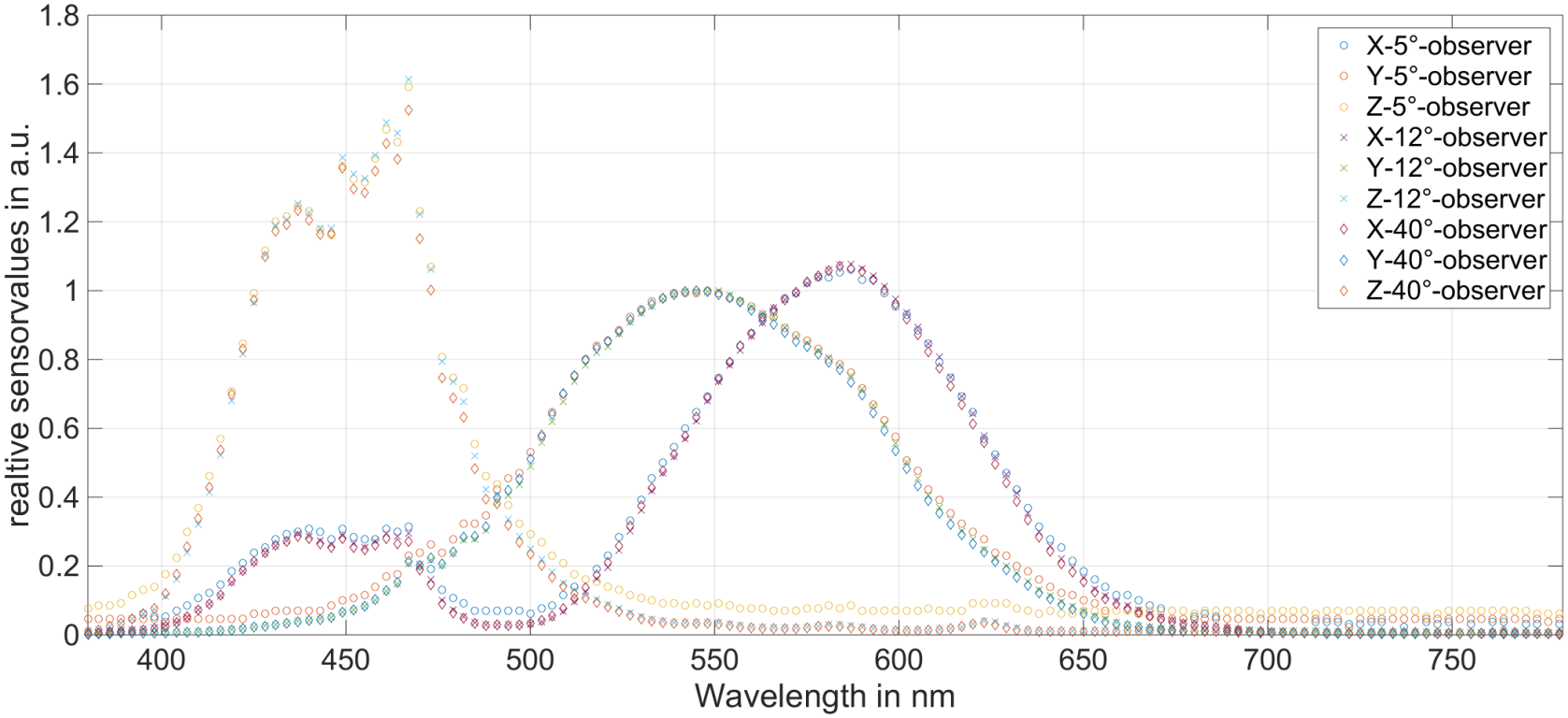
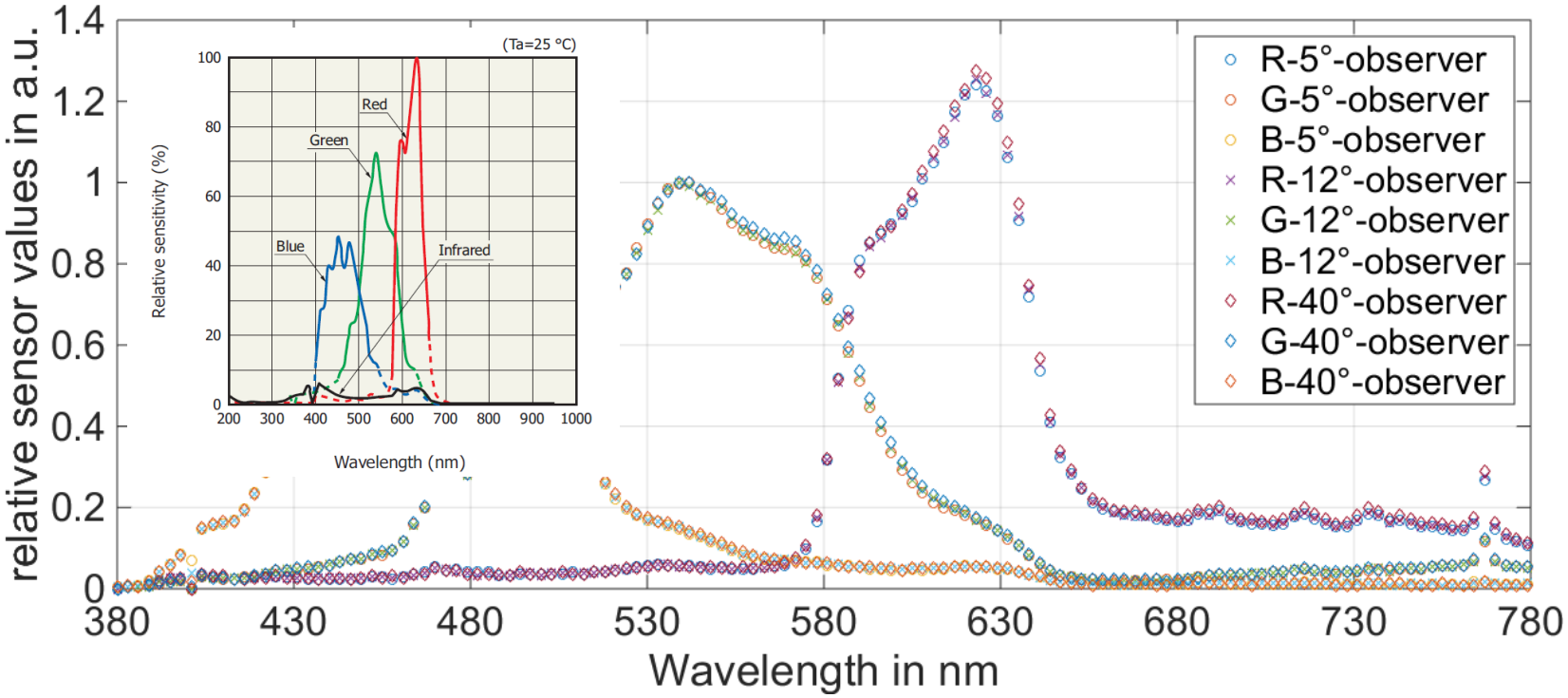


Huge Effect for Colour Coordinates

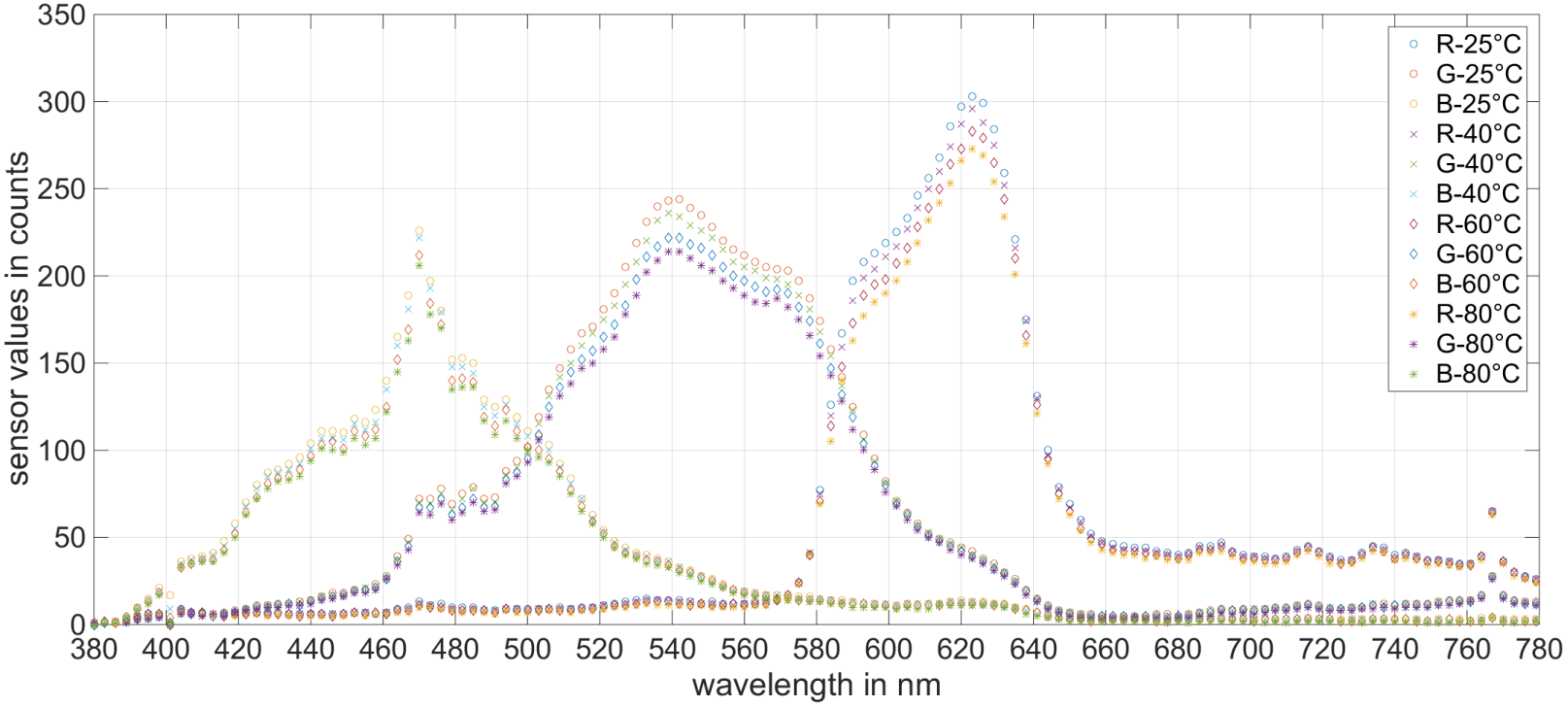
Angle Dependecie for Interference Filters



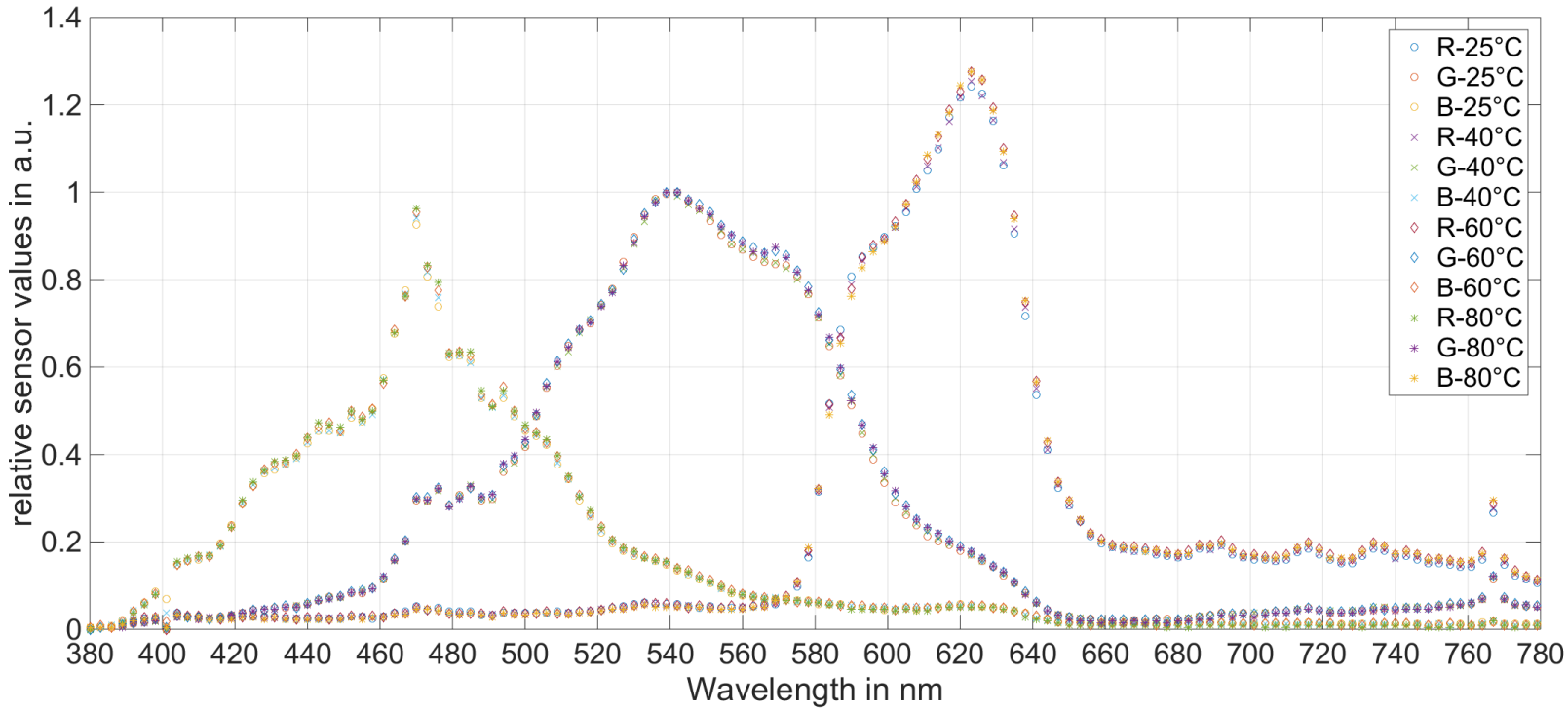
Angle Dependencie for Absortpion Filters



Temperature Dependencie



Temperature Dependencie Relative Curves



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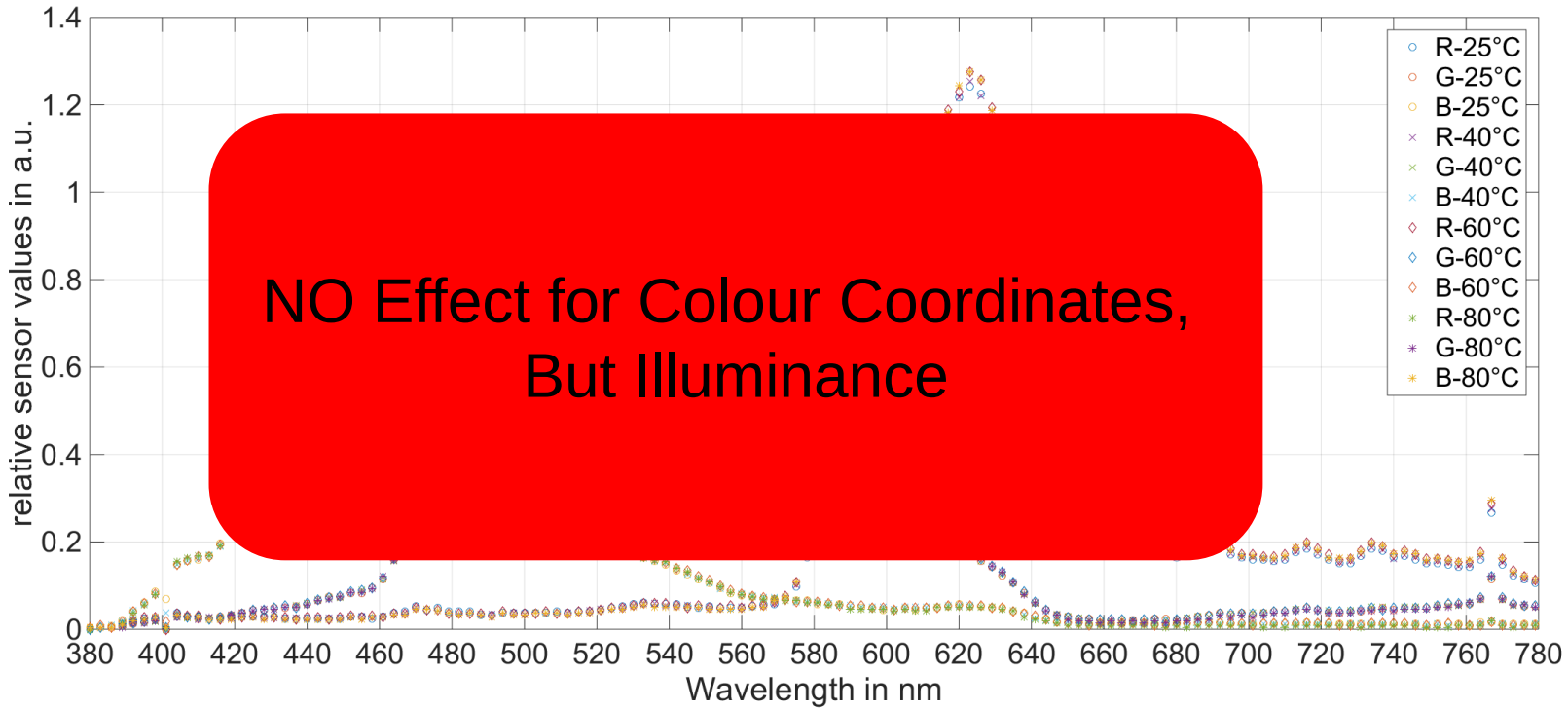
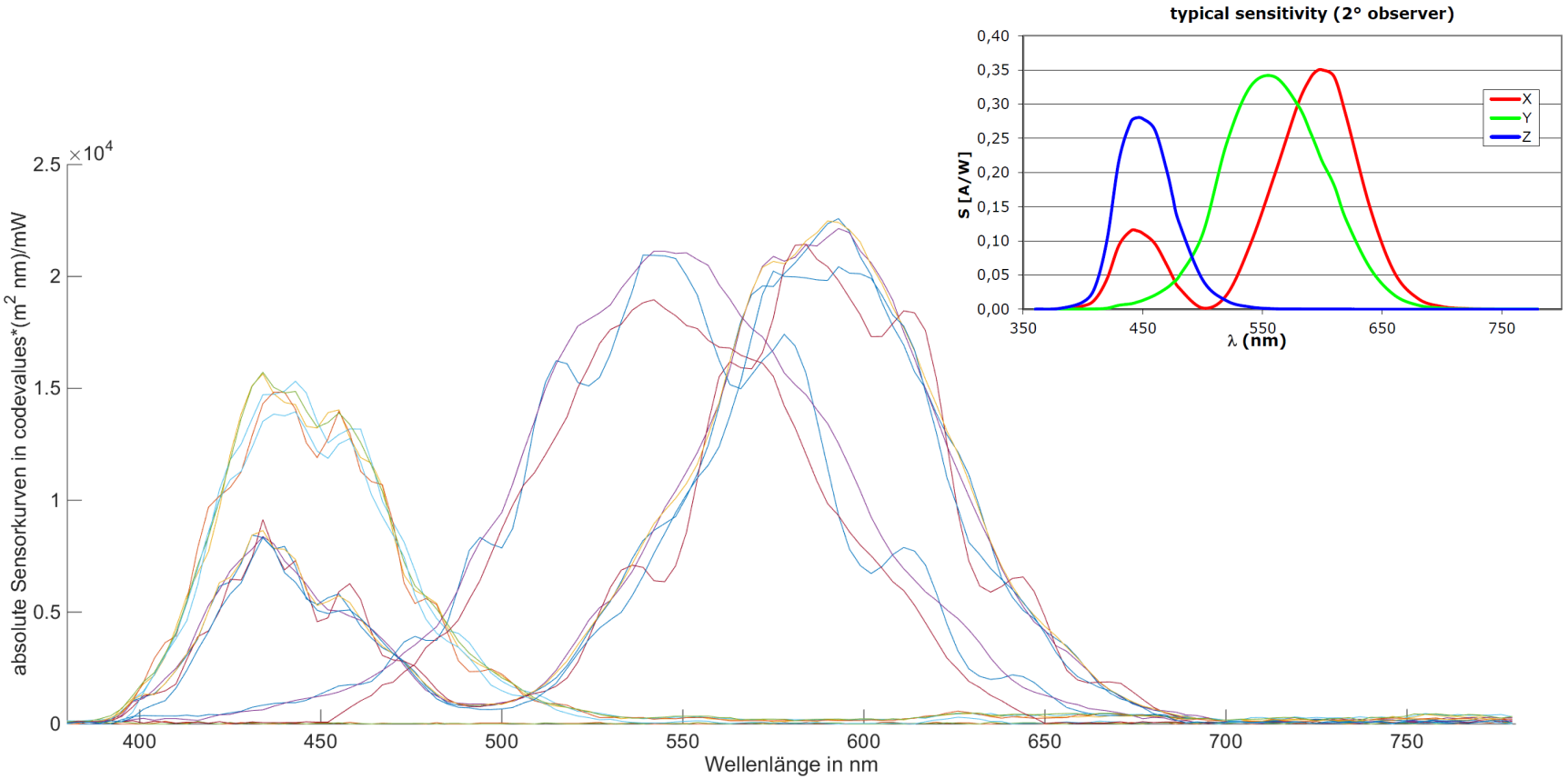
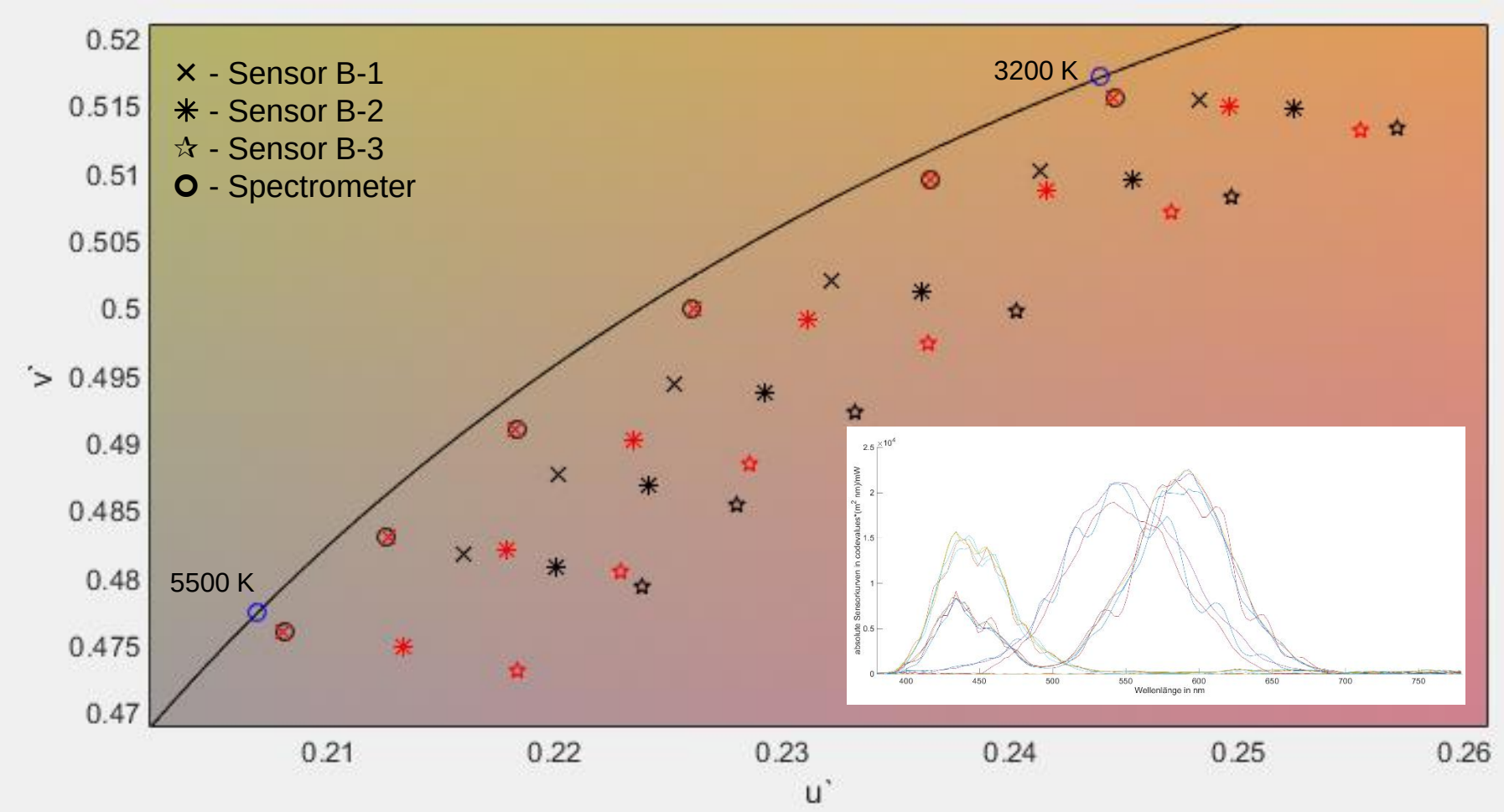


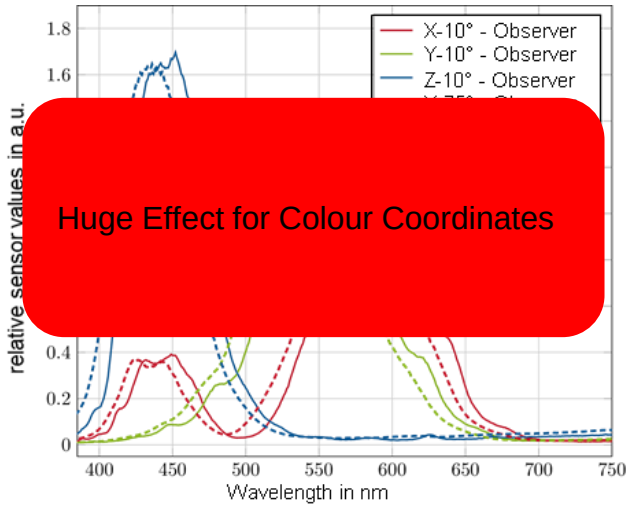
Different Values of Same Sensor Batch



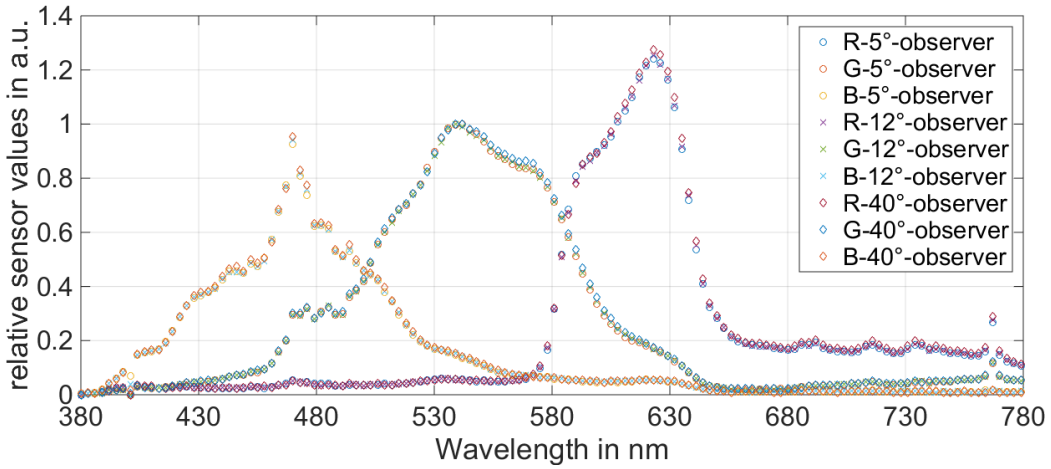
Efffect of Color Sensor Variation

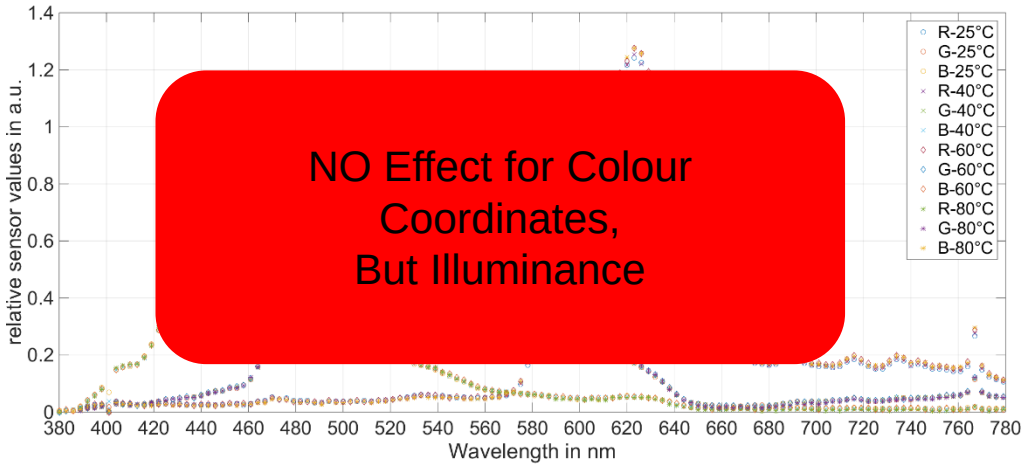


Conclusion

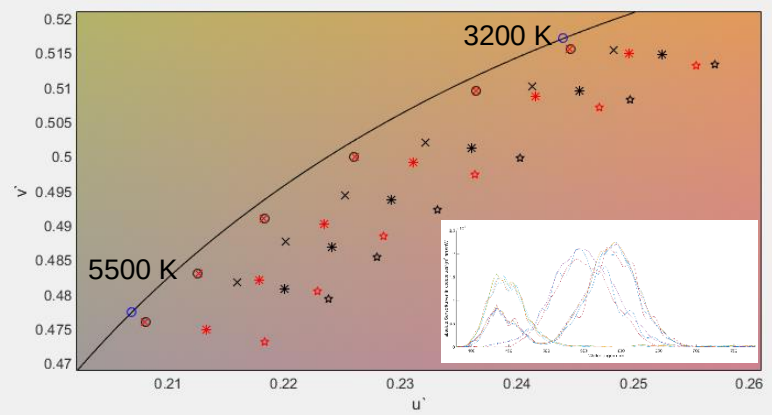


Huge Effect for Colour Coordinates





NO Effect for Colour Coordinates,
But Illuminance



Vielen Dank für Ihre Aufmerksamkeit

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