

Status of comparison of BTDF scales and overview of samples

SØREN ALKÆRSIG JENSEN

Danish Fundamental Metrology A/S
Kogle Allé 5, 2970 Hørsholm, Denmark

Jinglin Fu and Alfred Schirmacher

Physikalisch-Technische Bundesanstalt
AG 4.51 "Reflexion und Transmission"
Bundesallee 100, 38116 Braunschweig, Germany



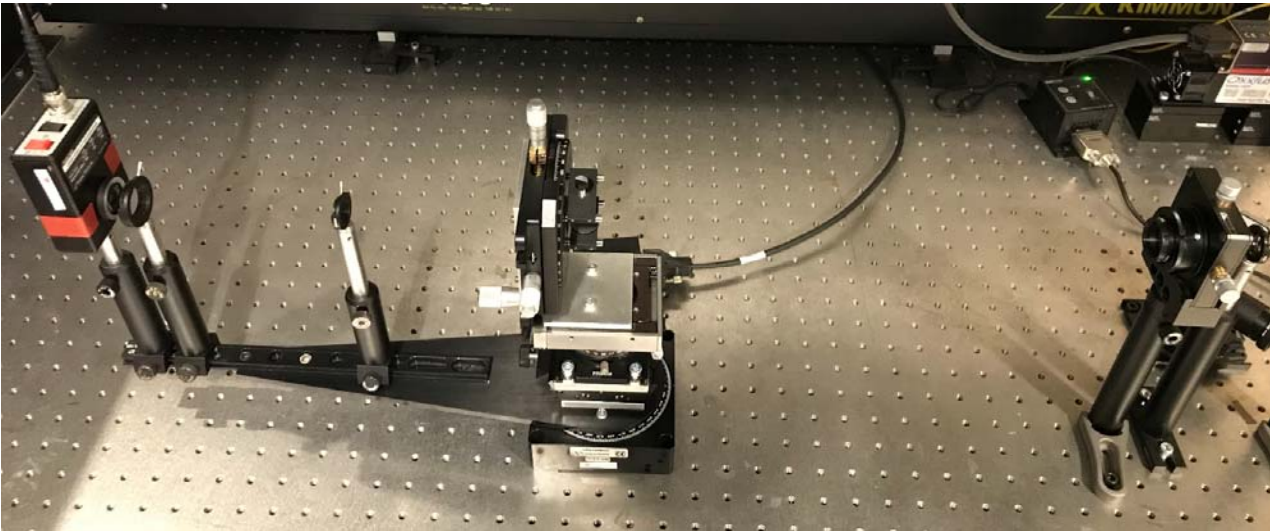
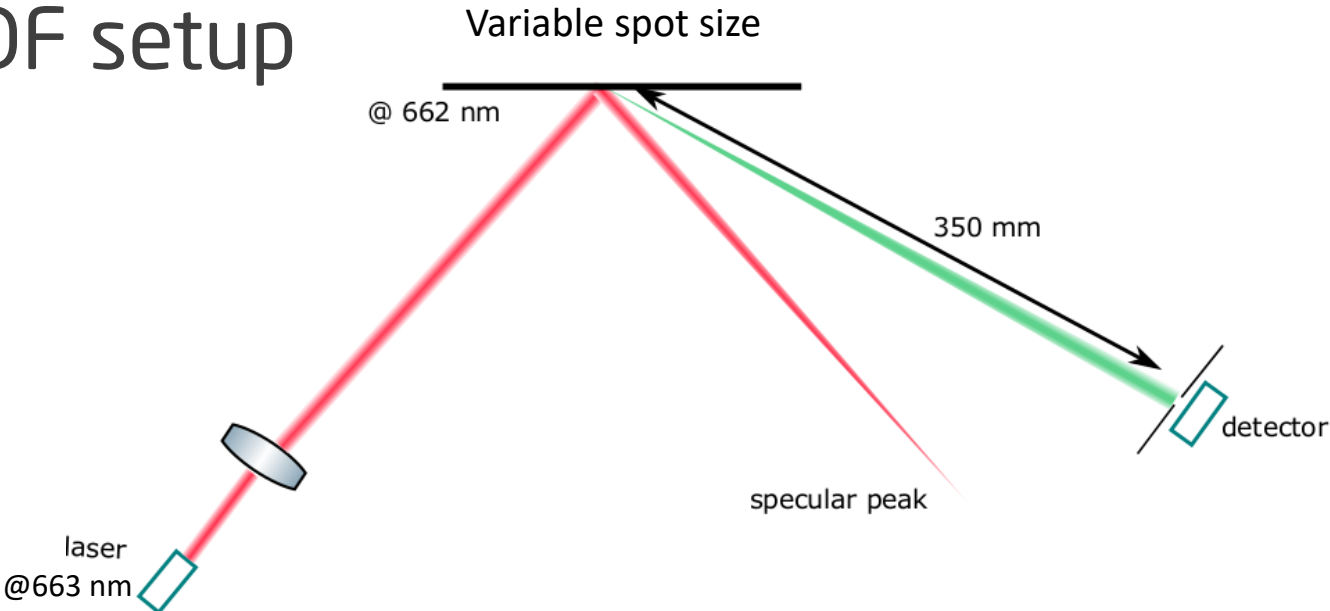
Physikalisch-Technische Bundesanstalt
Nationales Metrologieinstitut



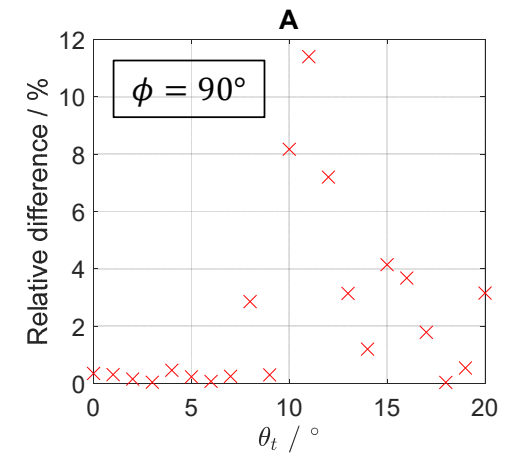
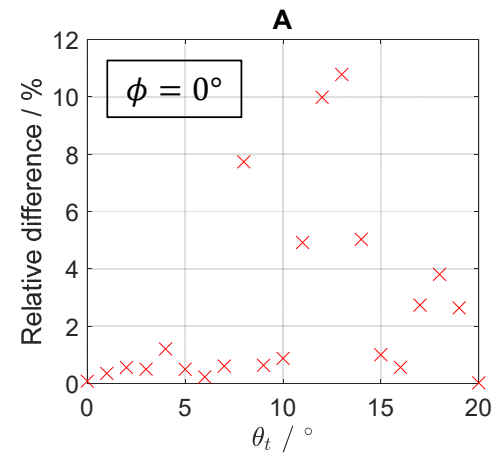
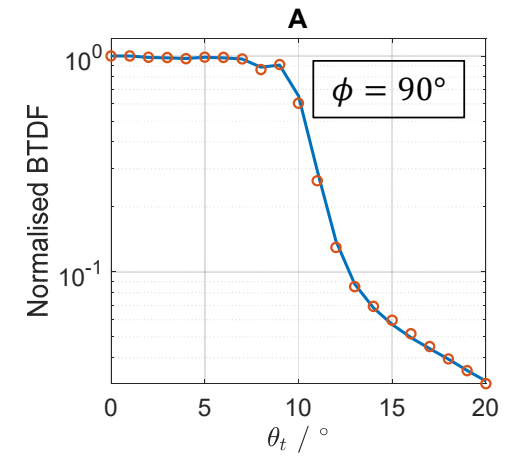
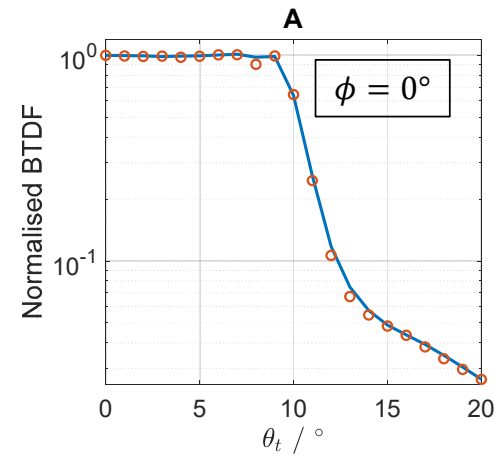
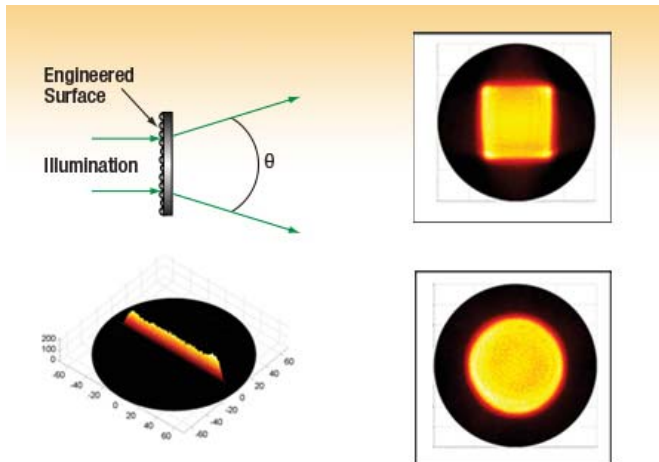
DFM

Danish National Metrology Institute

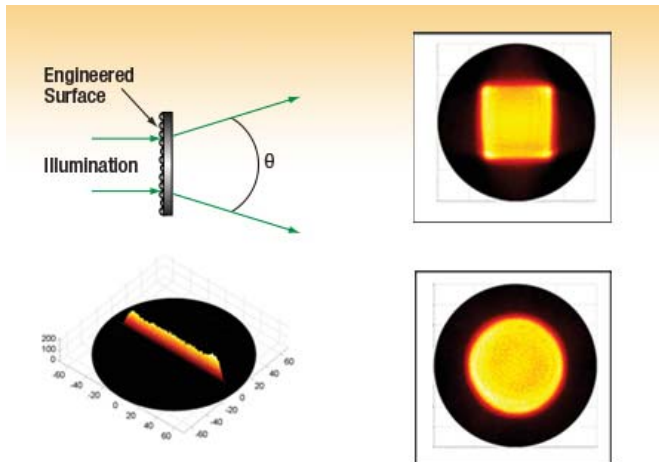
BRDF/BTDF setup at DFM



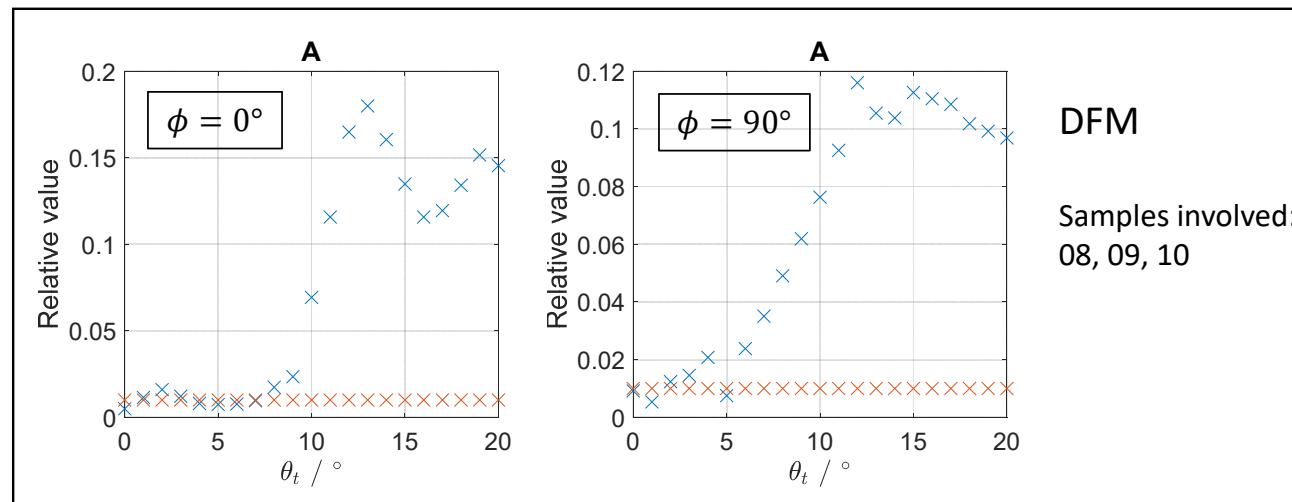
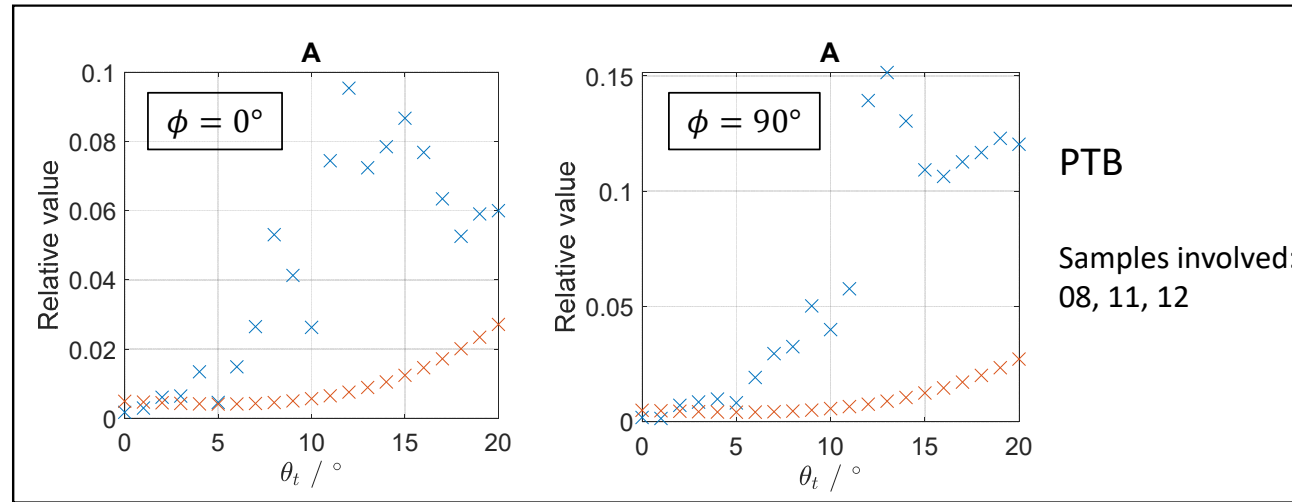
Sample A- Thorlabs rectangular diffuser



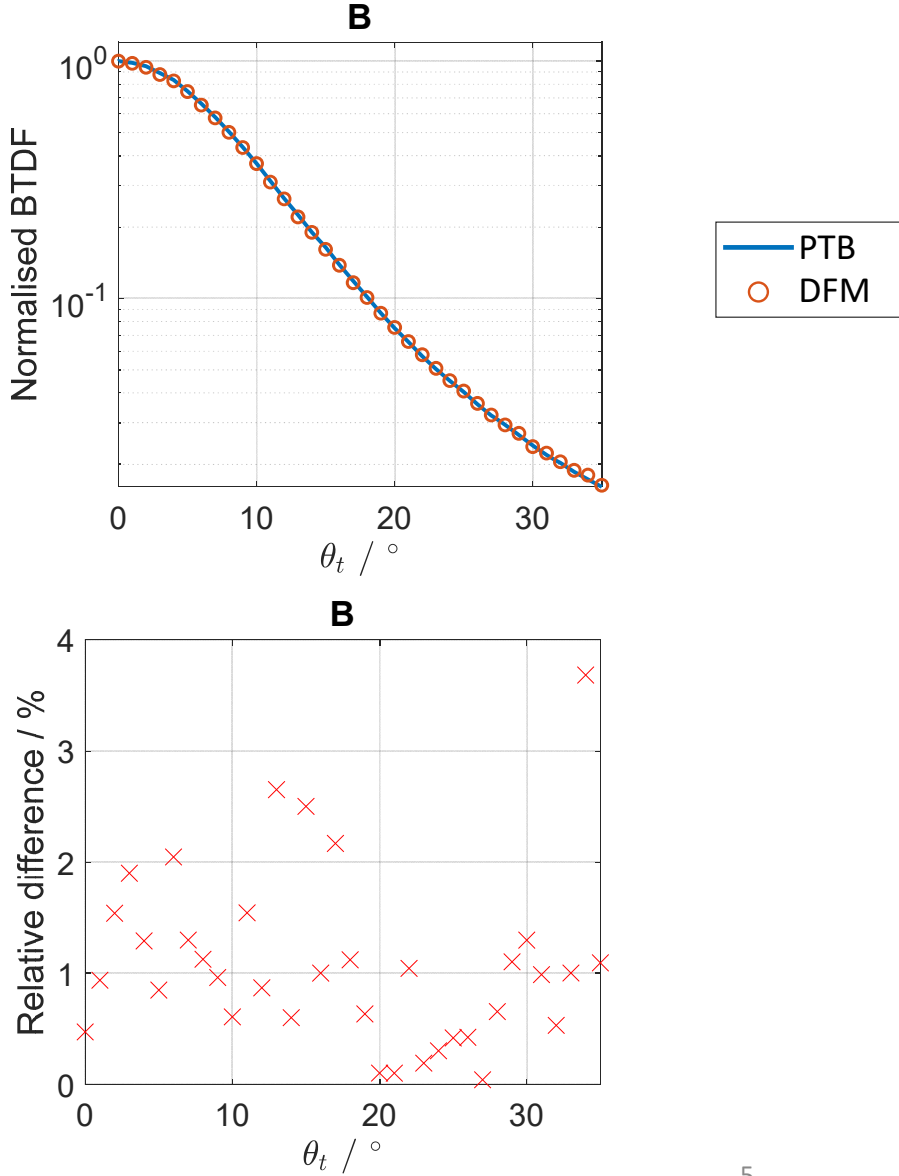
Sample A- Thorlabs rectangular diffuser



x Inter-set measured variation
x Preliminary expanded uncertainty



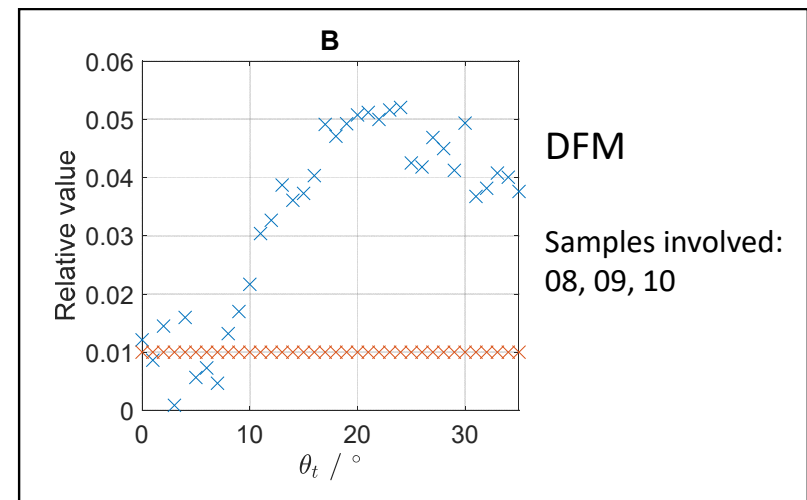
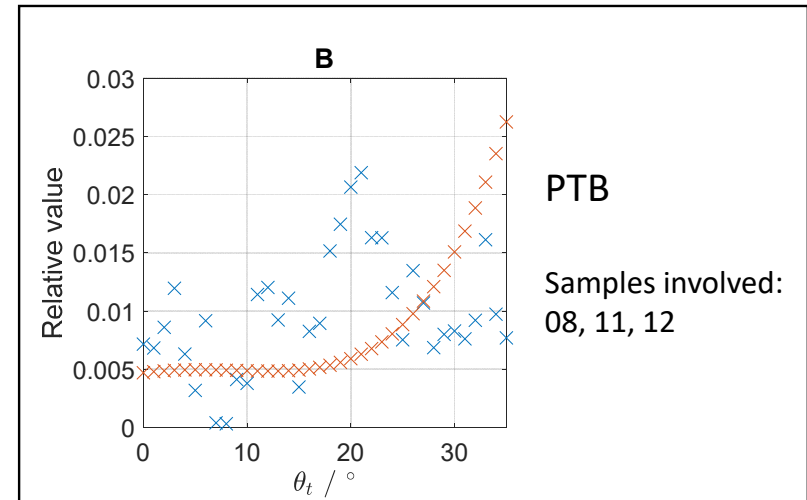
Sample B - Thorlabs Gaussian diffuser



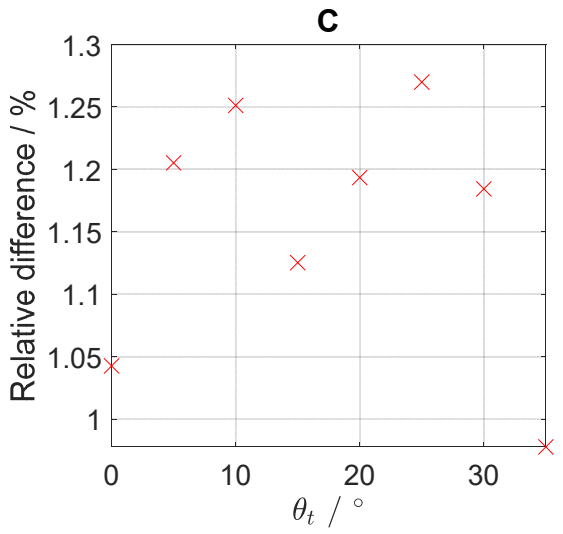
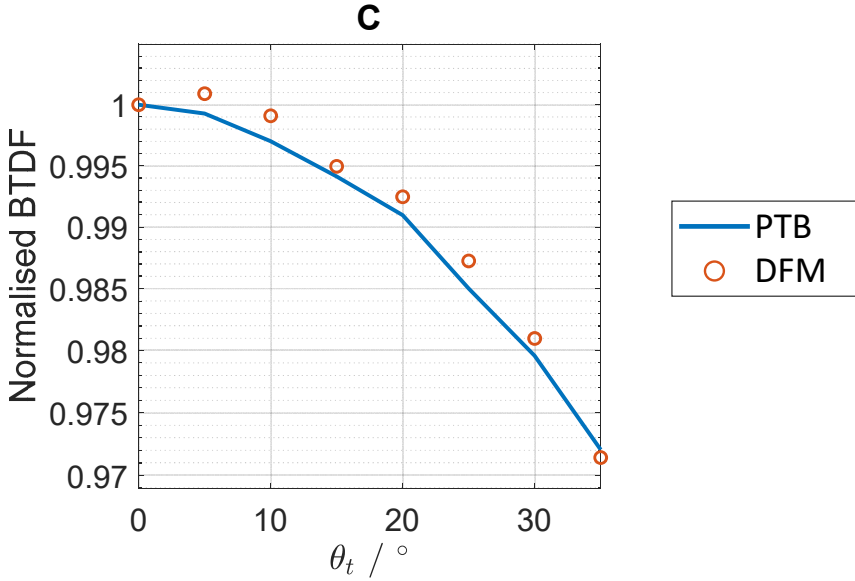
Sample B - Thorlabs Gaussian diffuser



× Inter-set measured variation
× Preliminary expanded uncertainty



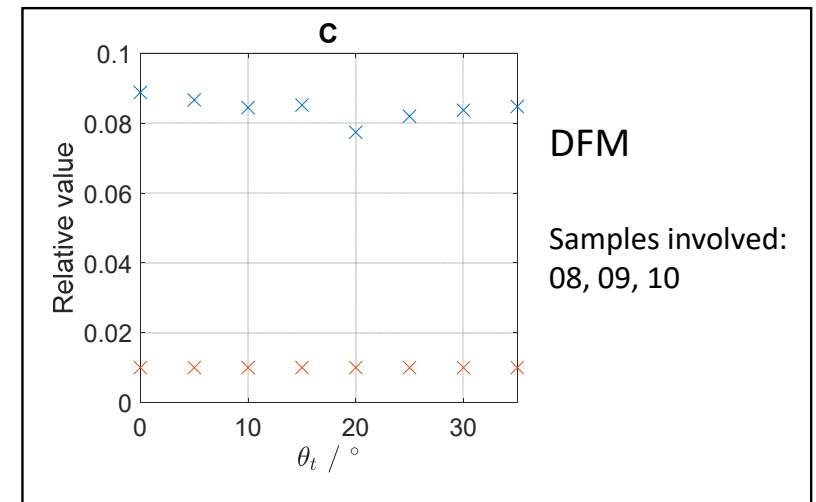
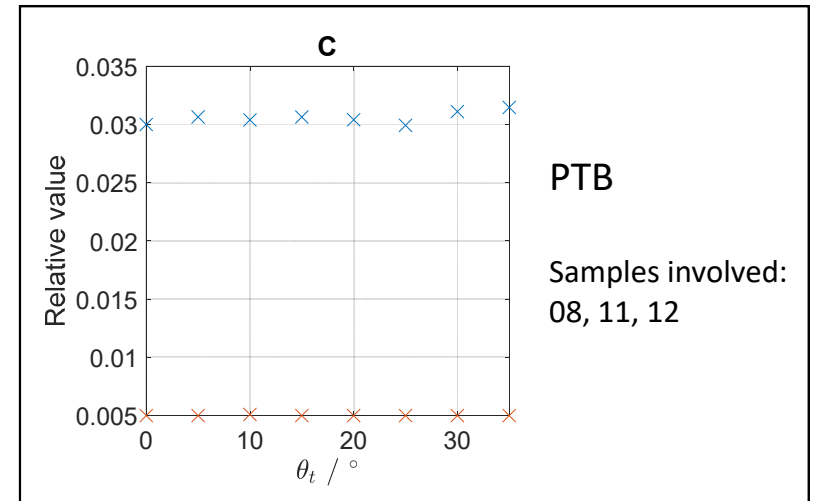
Sample C - Lambertian, Heraeus fused synthetic SiO₂ with uniform bubbles



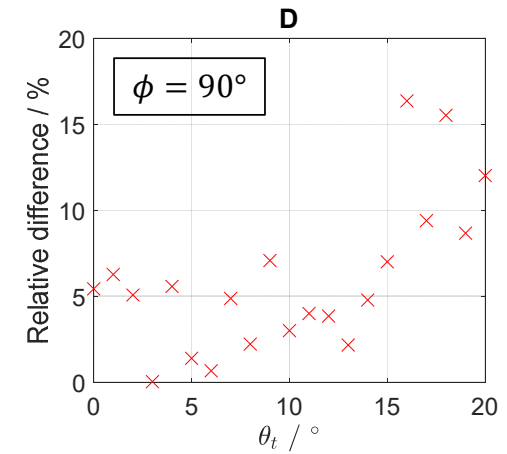
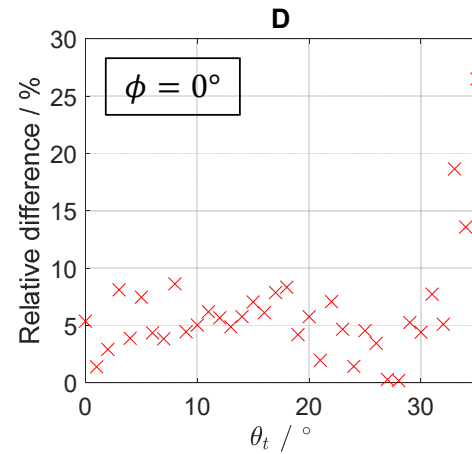
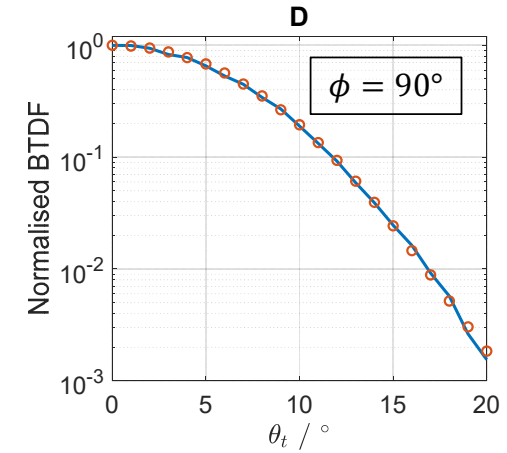
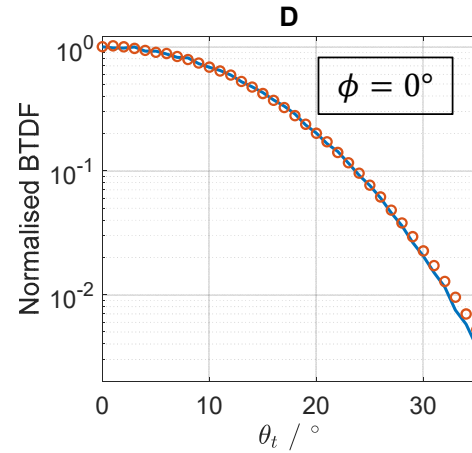
Sample C - Lambertian, Heraeus fused synthetic SiO₂ with uniform bubbles



× Inter-set measured variation
× Preliminary expanded uncertainty

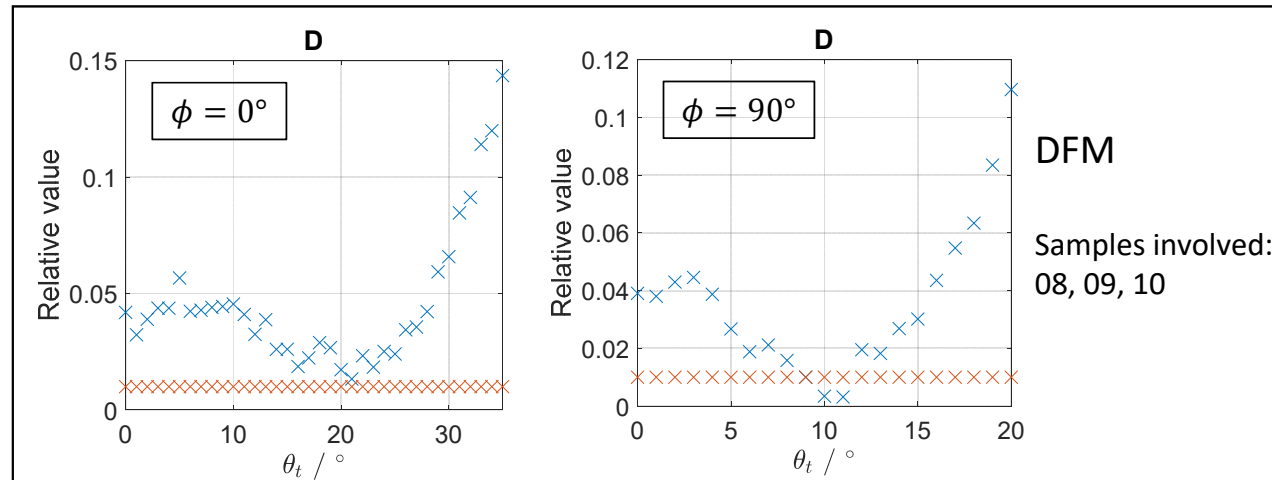
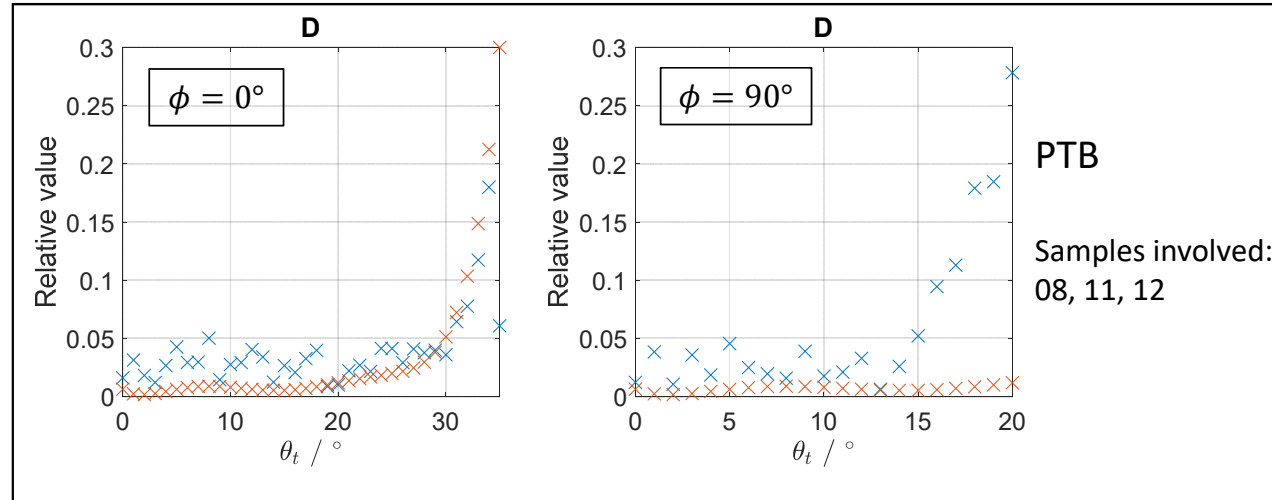


Sample D - Gaussian elliptical holographic diffuser from Temicon

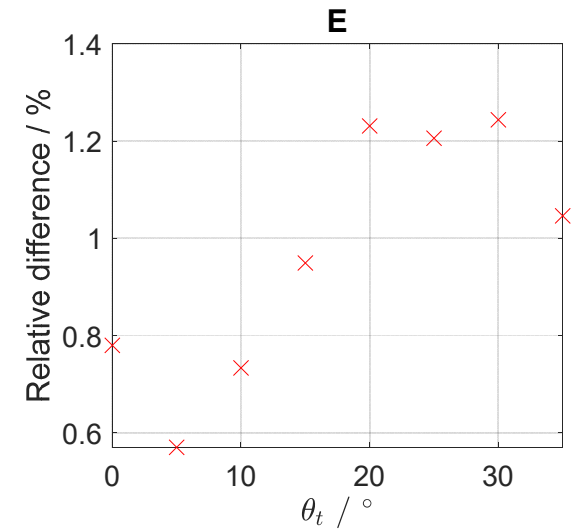
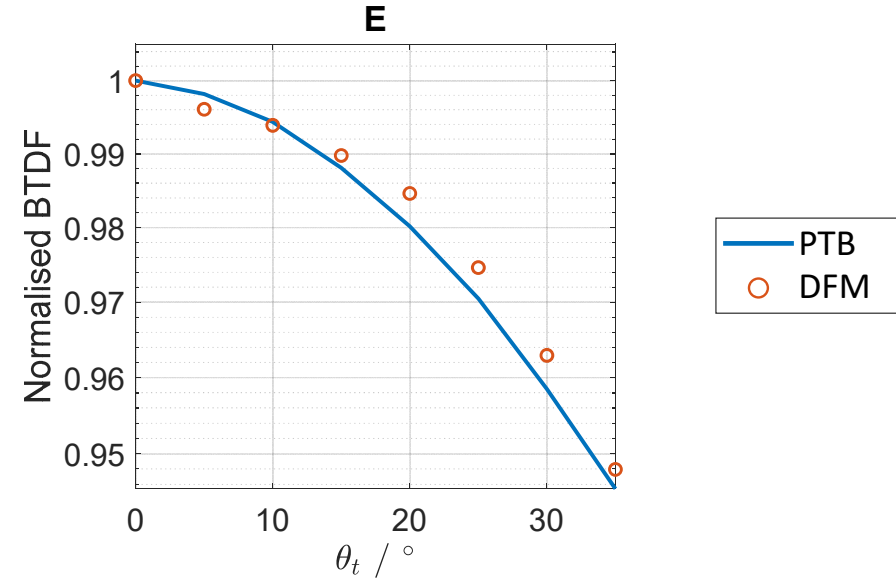


Sample D - Gaussian elliptical holographic diffuser from Temicon

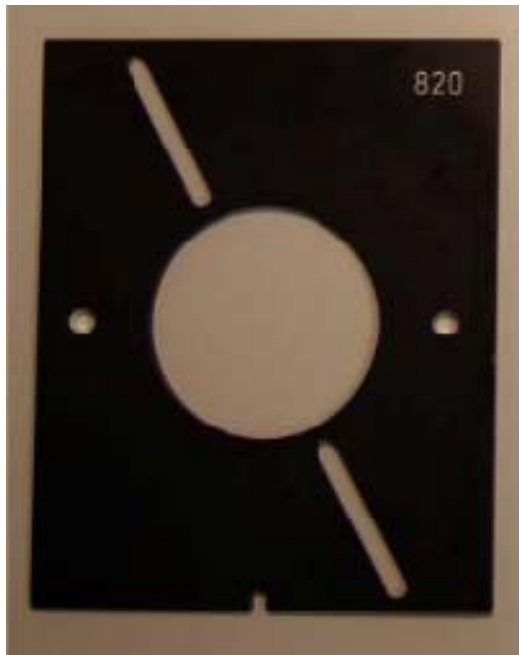
× Inter-set measured variation
× Preliminary expanded uncertainty



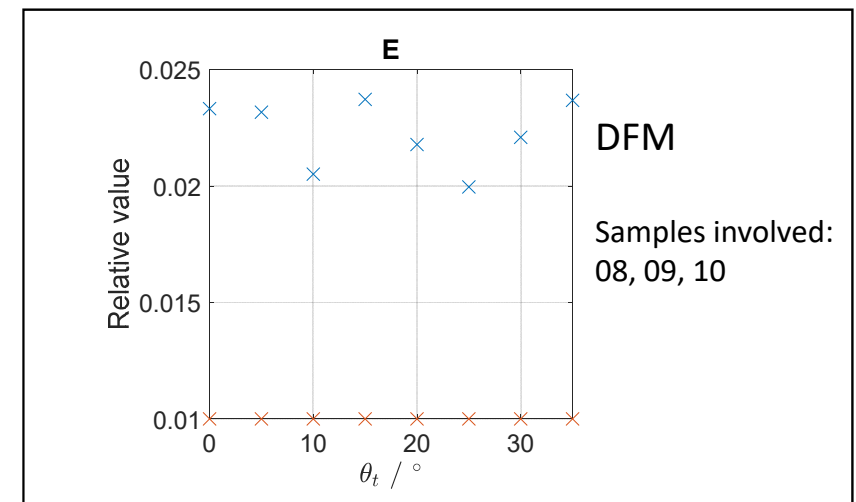
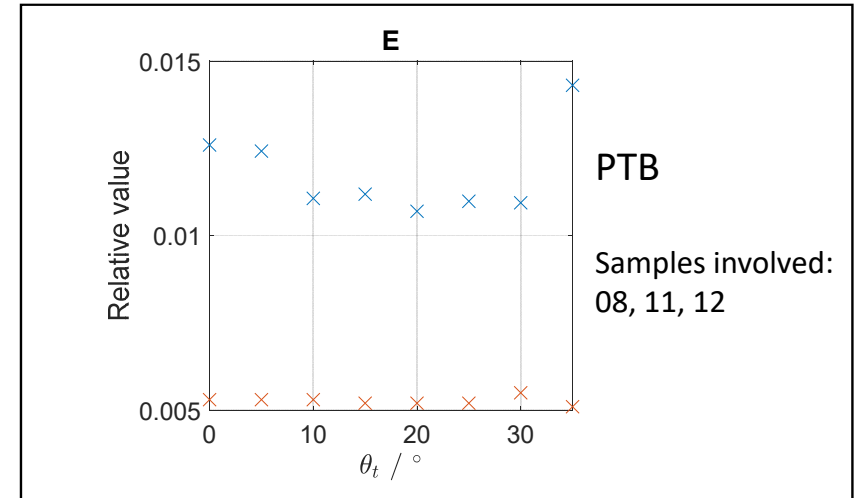
Sample E - Lambertian Zenith polymer, PTFE foil from Sphere Optics



Sample E - Lambertian Zenith polymer, PTFE foil from Sphere Optics



× Inter-set measured variation
× Preliminary expanded uncertainty



Remarks PTB

- Data of 3 sets involved: 08, 11, 12
- Relative value = standard deviation / mean value
- Under same measurement conditions / specific illumination area for each sample type
- MU only estimated

Remarks DFM

- Data of 3 sets involved: 08, 09, 10
- Relative value = standard deviation / mean value
- MU estimated 1% at all θ_t

Remarks DFM & PTB

- Data of 5 sets involved: 08, 09, 10, 11, 12
→ Inter-set measured variation
- Relative value = standard deviation / mean value
- MU from PTB
- Pilot 1 → PTB; Pilot 2 → DFM