

Electronic Supplementary Information (ESI)

Photoluminescence of Yb^{2+} ions doped in the perovskites CsCaX_3 and CsSrX_3 ($\text{X} = \text{Cl}, \text{Br}, \text{I}$) – A comparative study

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X-ray powder diffraction patterns of CsMX_3 : 0.1% Yb^{2+} ($\text{M} = \text{Ca}, \text{Sr}$; $\text{X} = \text{Cl}, \text{Br}, \text{I}$)

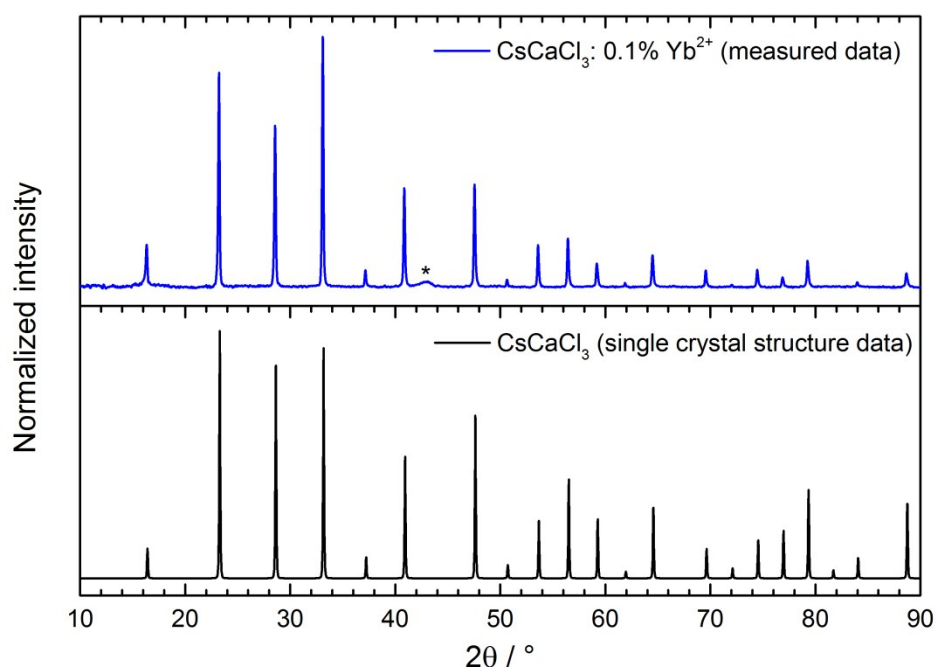


Figure S1. Measured XRD pattern of CsCaCl_3 : 0.1% Yb^{2+} (blue) compared to the diffraction pattern based on single crystal structure data (based on reference 54 in the main article). The black asterisk marks a reflection from the silicon grease used for the sample preparation.

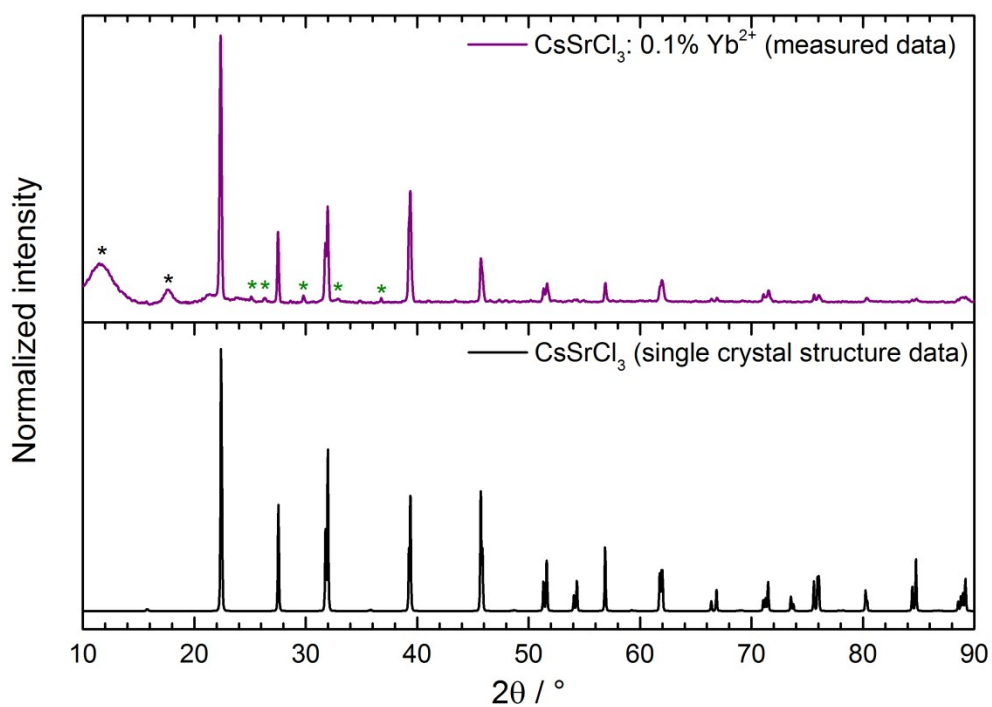


Figure S2. Measured XRD pattern of CsSrCl₃: 0.1% Yb²⁺ (violet) compared to the diffraction pattern based on single crystal structure data (based on reference 55 in the paper). The black asterisks mark reflections from the silicon grease used for the sample preparation. The green asterisks mark reflections arising from *in situ* hydrate formation during the measurement on air (they grow in intensity after subsequent measurements).

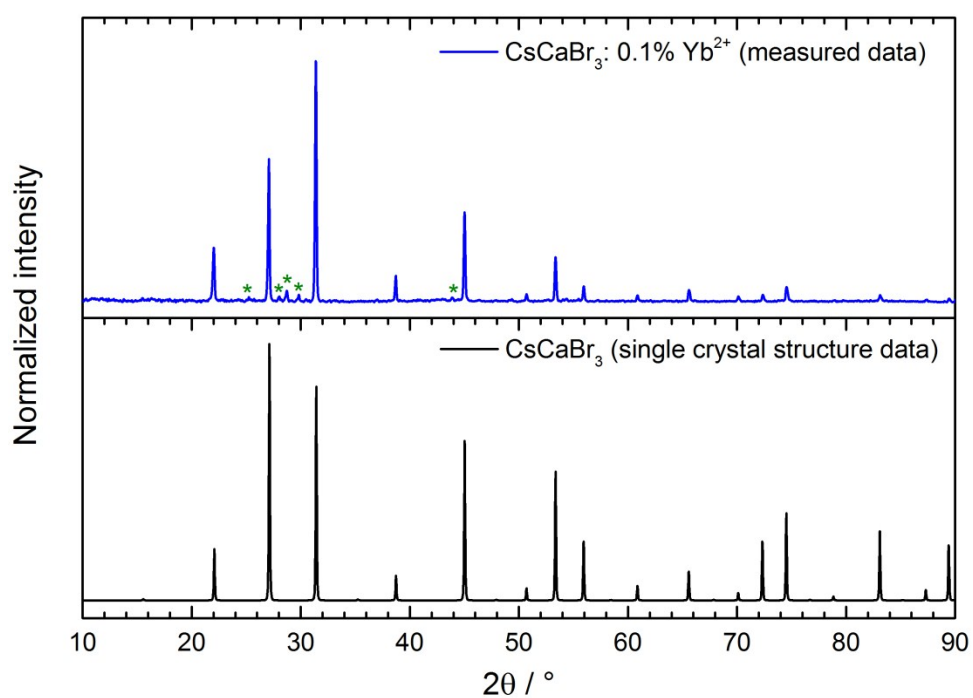


Figure S3. Measured XRD pattern of CsCaBr₃: 0.1% Yb²⁺ (blue) compared to the diffraction pattern based on single crystal structure data (based on reference 56 in the paper). The green asterisks mark reflections arising from *in situ* hydrate formation during the measurement on air (they grow in intensity after subsequent measurements).

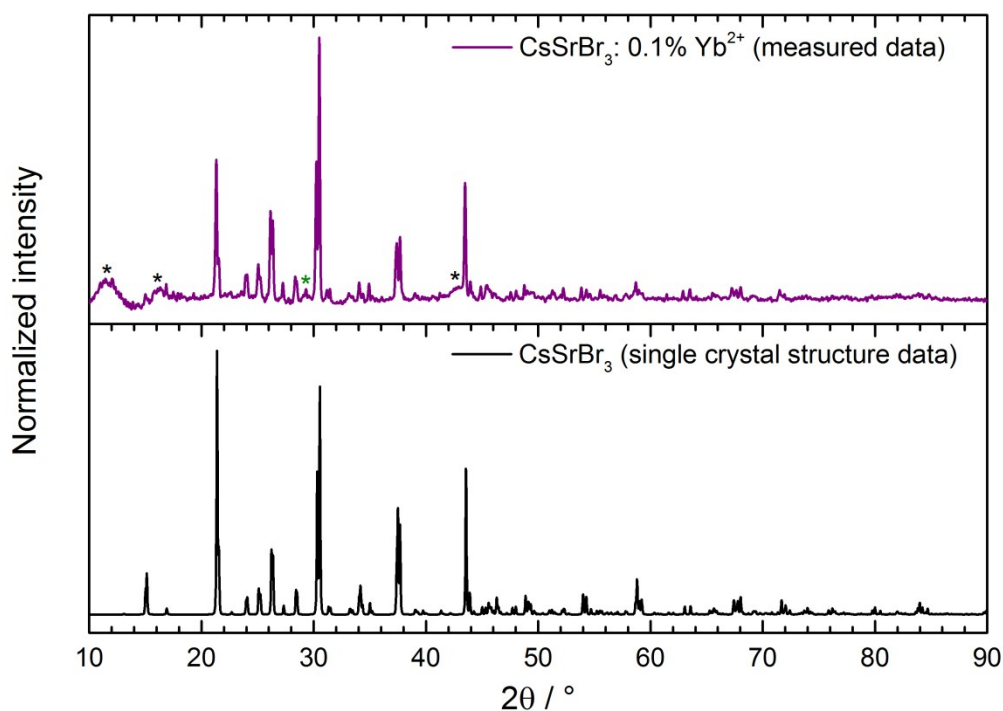


Figure S4. Measured XRD pattern of CsSrBr₃: 0.1% Yb²⁺ (violet) compared to the diffraction pattern based on single crystal structure data (based on reference 56 in the paper). The black asterisks mark reflections from the silicon grease used for the sample preparation. The green asterisks mark reflections arising from *in situ* hydrate formation during the measurement on air (they grow in intensity after subsequent measurements).

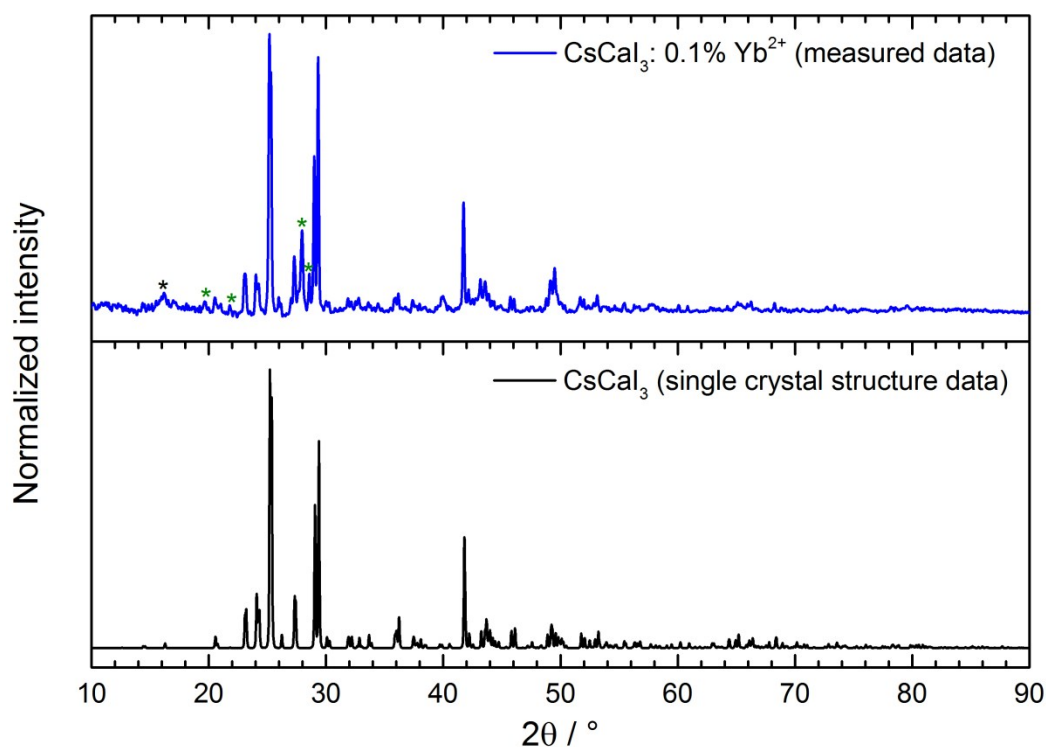


Figure S5. Measured XRD pattern of CsCa₃: 0.1% Yb²⁺ (blue) compared to the diffraction pattern based on single crystal structure data (based on reference 56 in the paper). The black asterisk marks a reflection from the silicon grease used for the sample preparation. The green asterisks mark reflections arising from *in situ* hydrate formation during the measurement on air (they grow in intensity after subsequent measurements).

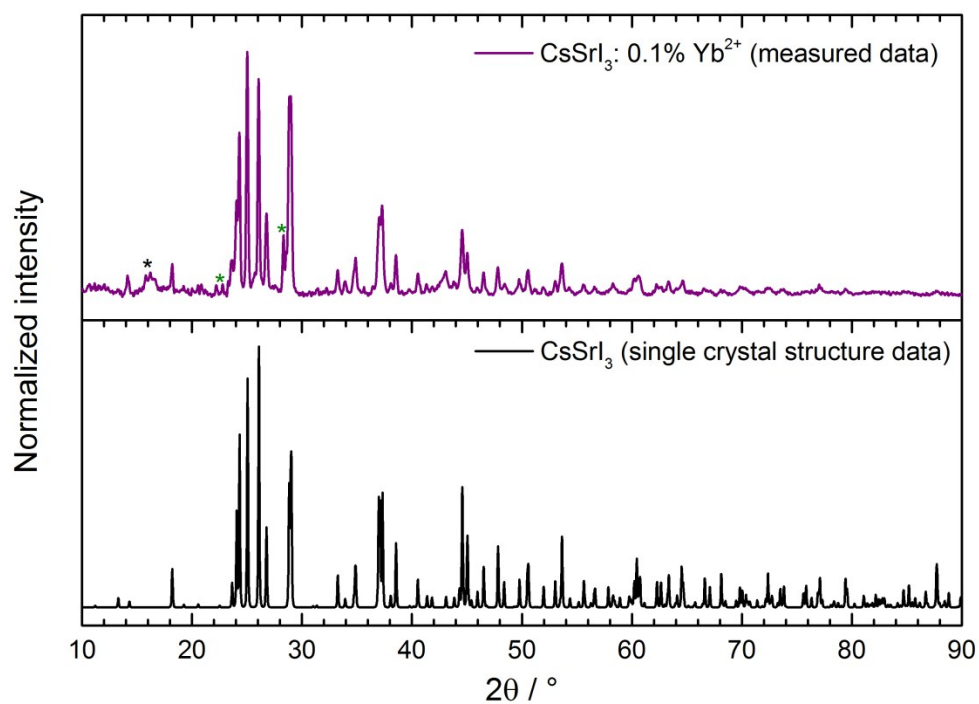


Figure S6. Measured XRD pattern of CsSrI₃: 0.1% Yb²⁺ (violet) compared to the diffraction pattern based on single crystal structure data (based on reference 56 in the paper). The black asterisk marks a reflection from the silicon grease used for the sample preparation. The green asterisks mark reflections arising from *in situ* hydrate formation during the measurement on air (they grow in intensity after subsequent measurements).