

La modélisation des diffractogrammes de rayons X : Nouvelles perspectives pour la minéralogie des sols

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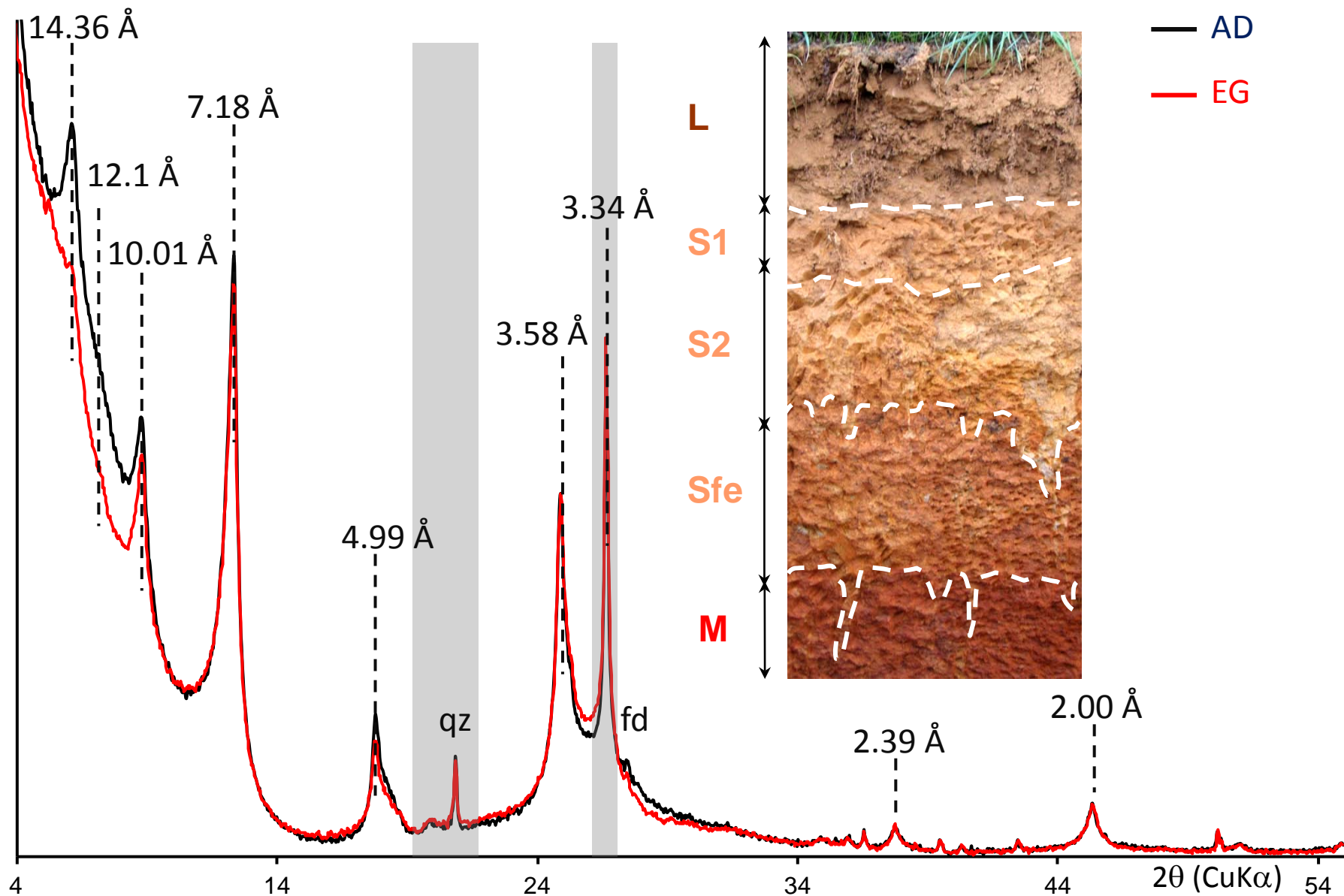
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Soil clay mineralogy using XRD

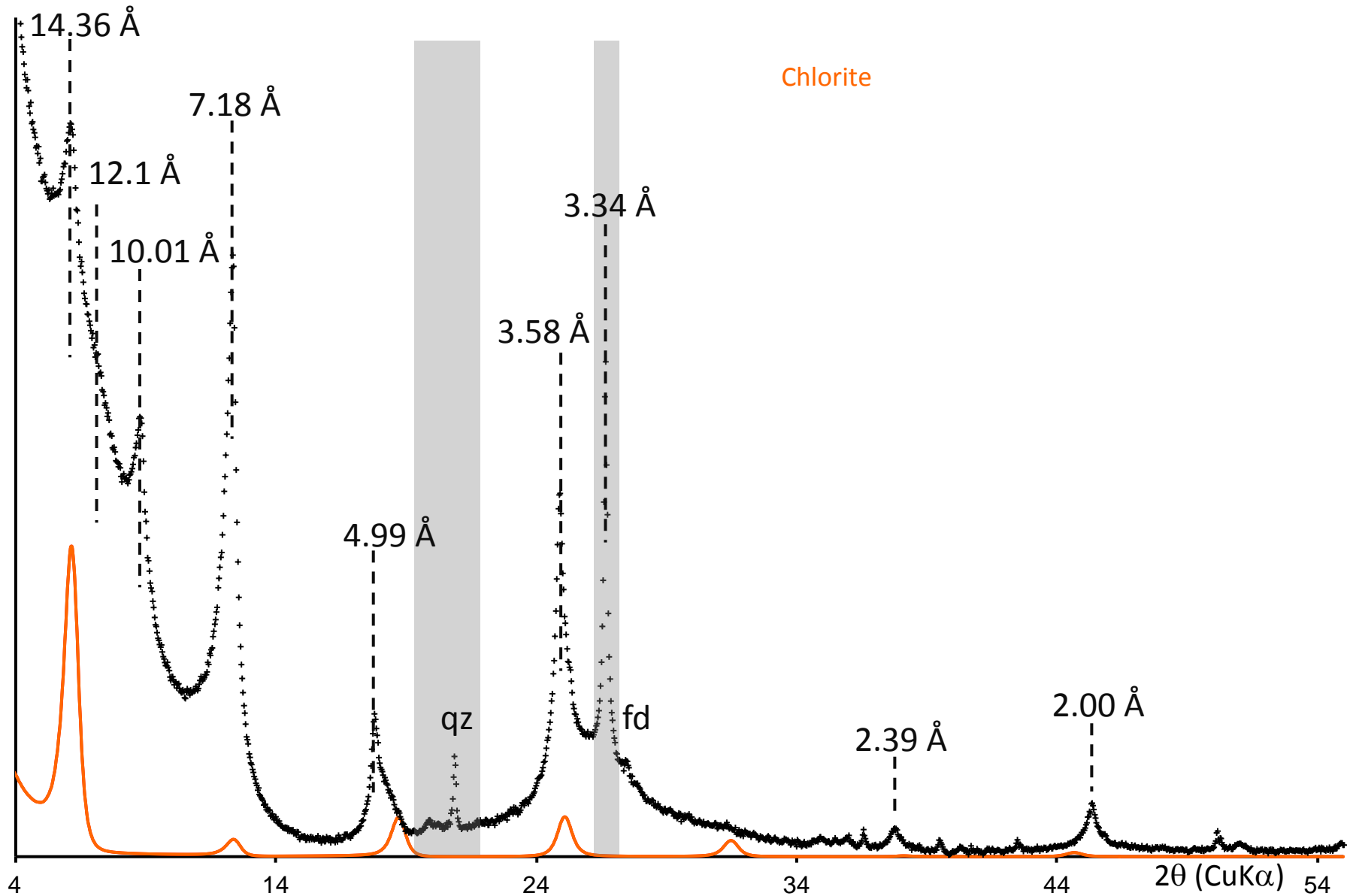
<2.0 μm fraction Sfe horizon / Cambisol - France



Courtesy F. Hubert

Soil clay mineralogy using XRD

<2.0 μm fraction Sfe horizon / Cambisol – France (AD)



Chlorite

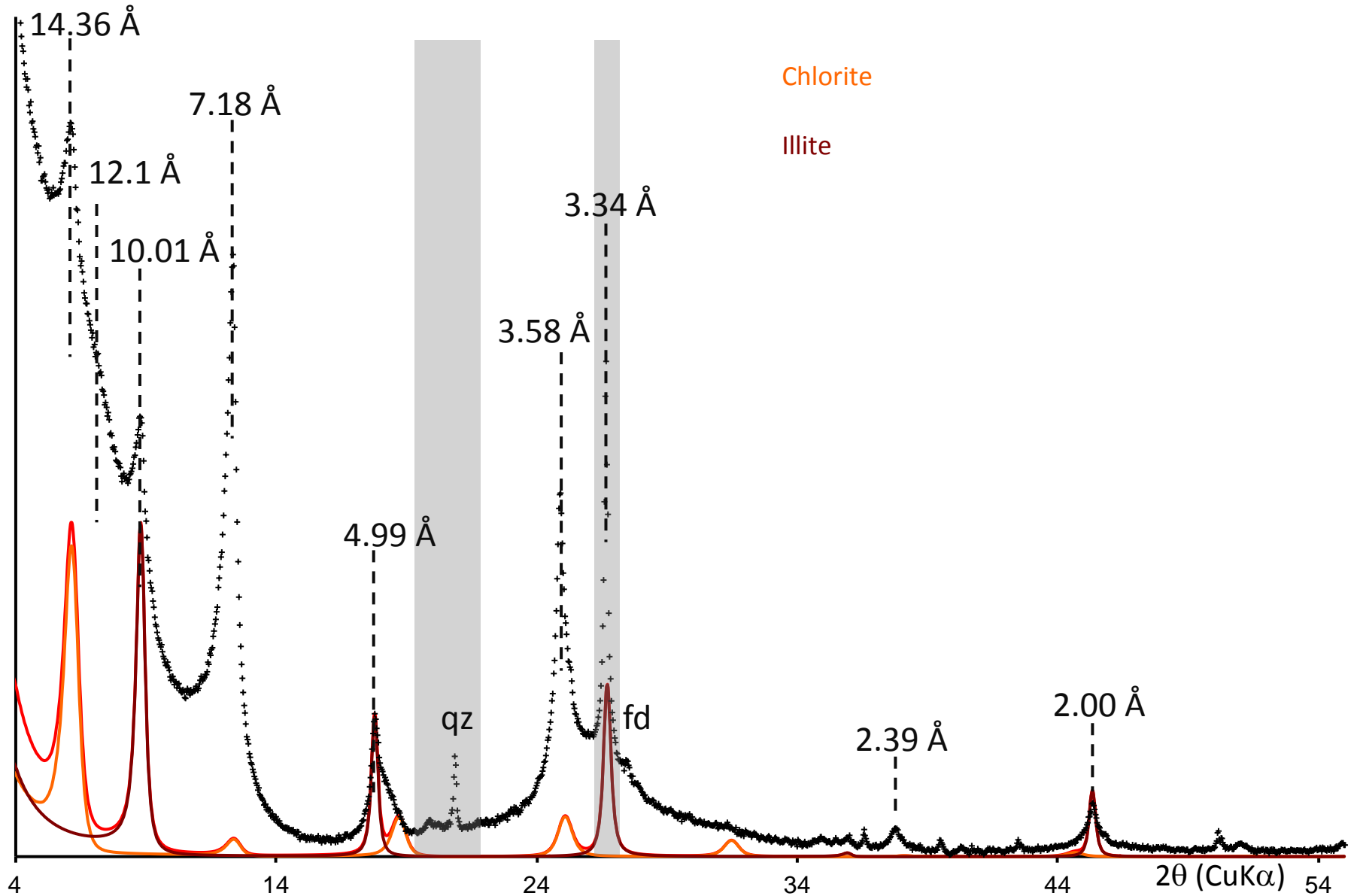
qz

fd

Courtesy F. Hubert

Soil clay mineralogy using XRD

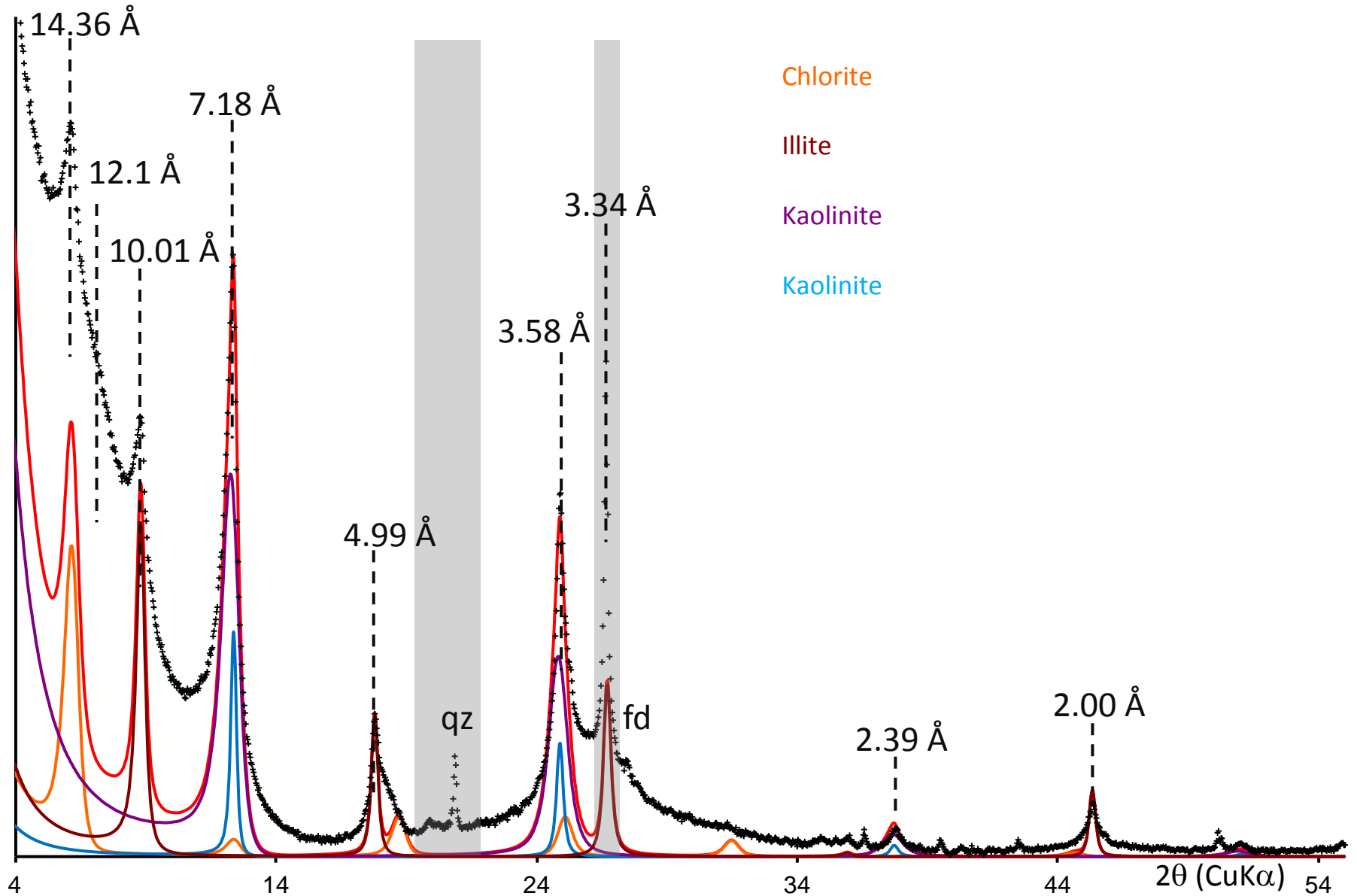
<2.0 μm fraction Sfe horizon / Cambisol – France (AD)



Courtesy F. Hubert

Soil clay mineralogy using XRD

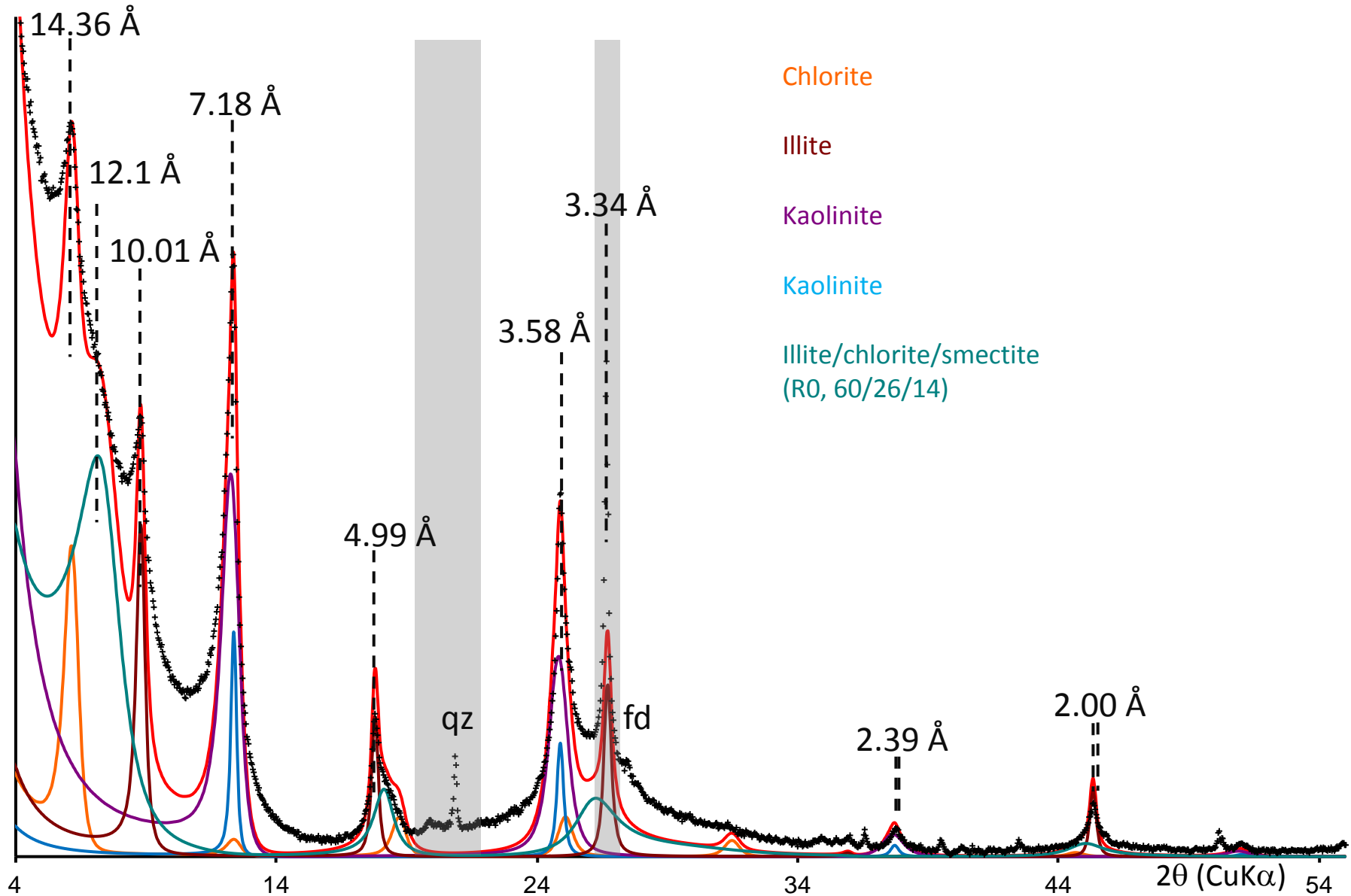
<2.0 μm fraction Sfe horizon / Cambisol – France (AD)



Courtesy F. Hubert

Soil clay mineralogy using XRD

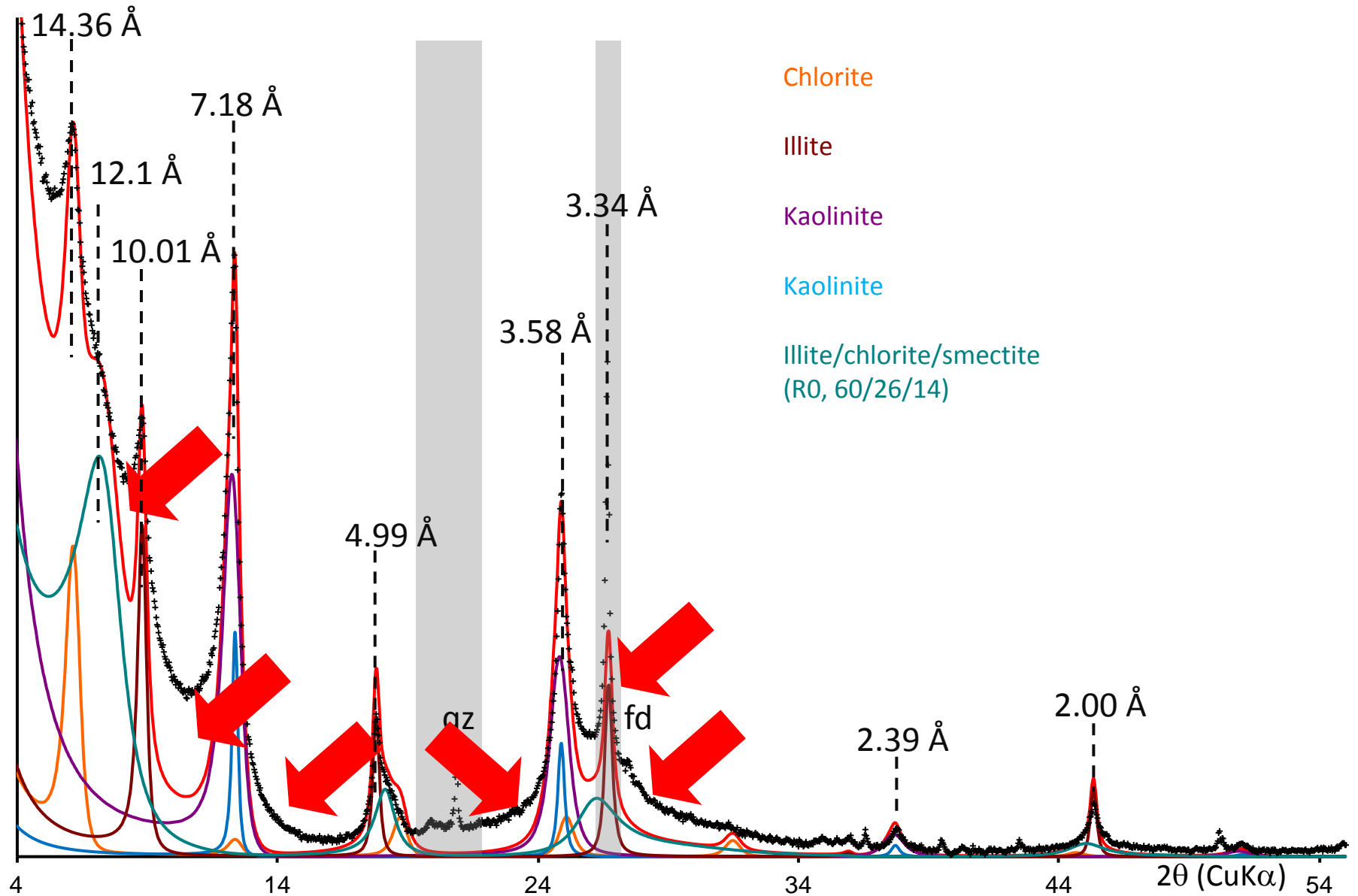
<2.0 μm fraction Sfe horizon / Cambisol – France (AD)



Courtesy F. Hubert

Soil clay mineralogy using XRD profile modeling

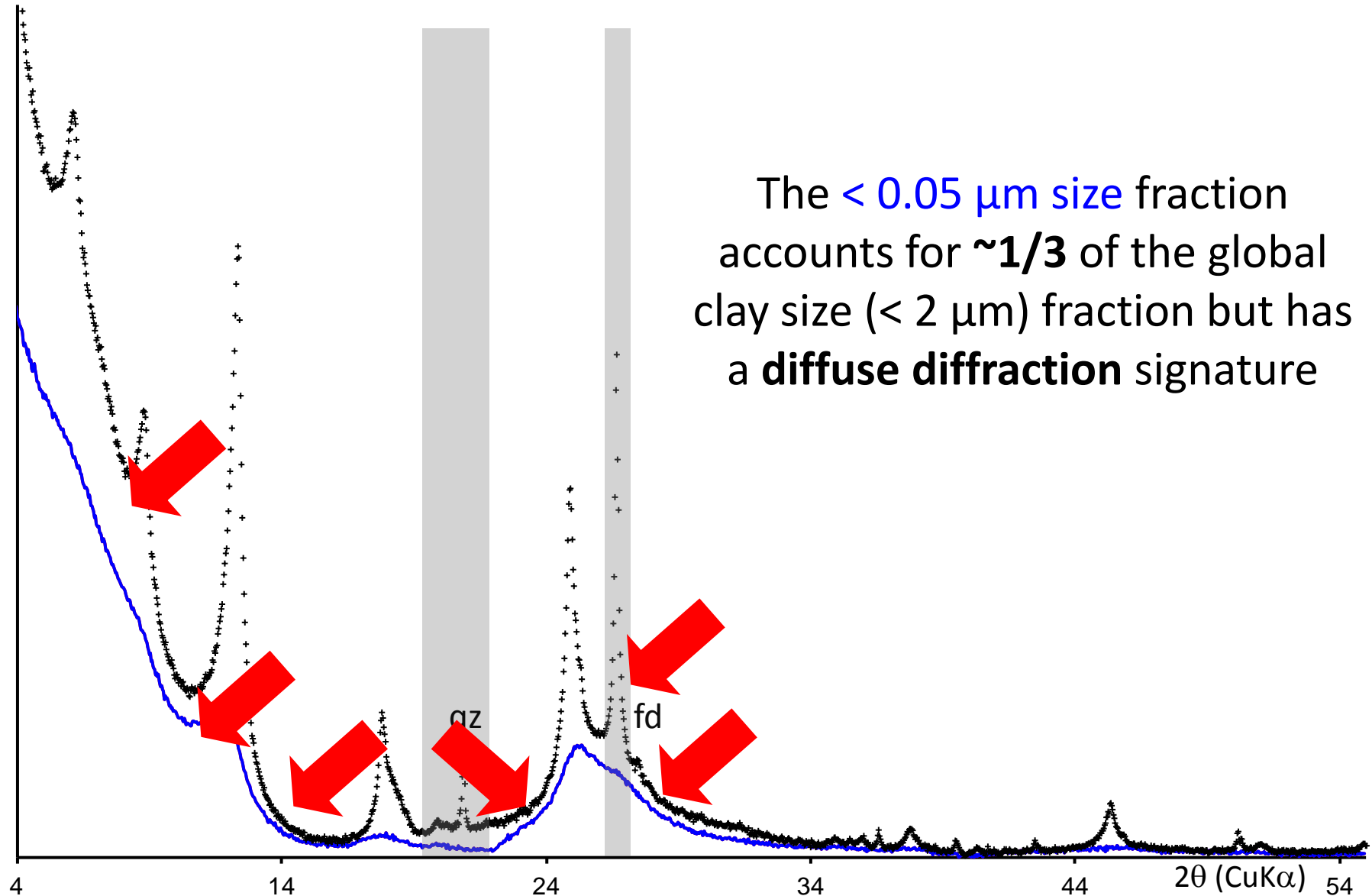
<2.0 μm fraction Sfe horizon / Cambisol – France (AD)



Courtesy F. Hubert

Soil clay mineralogy using XRD

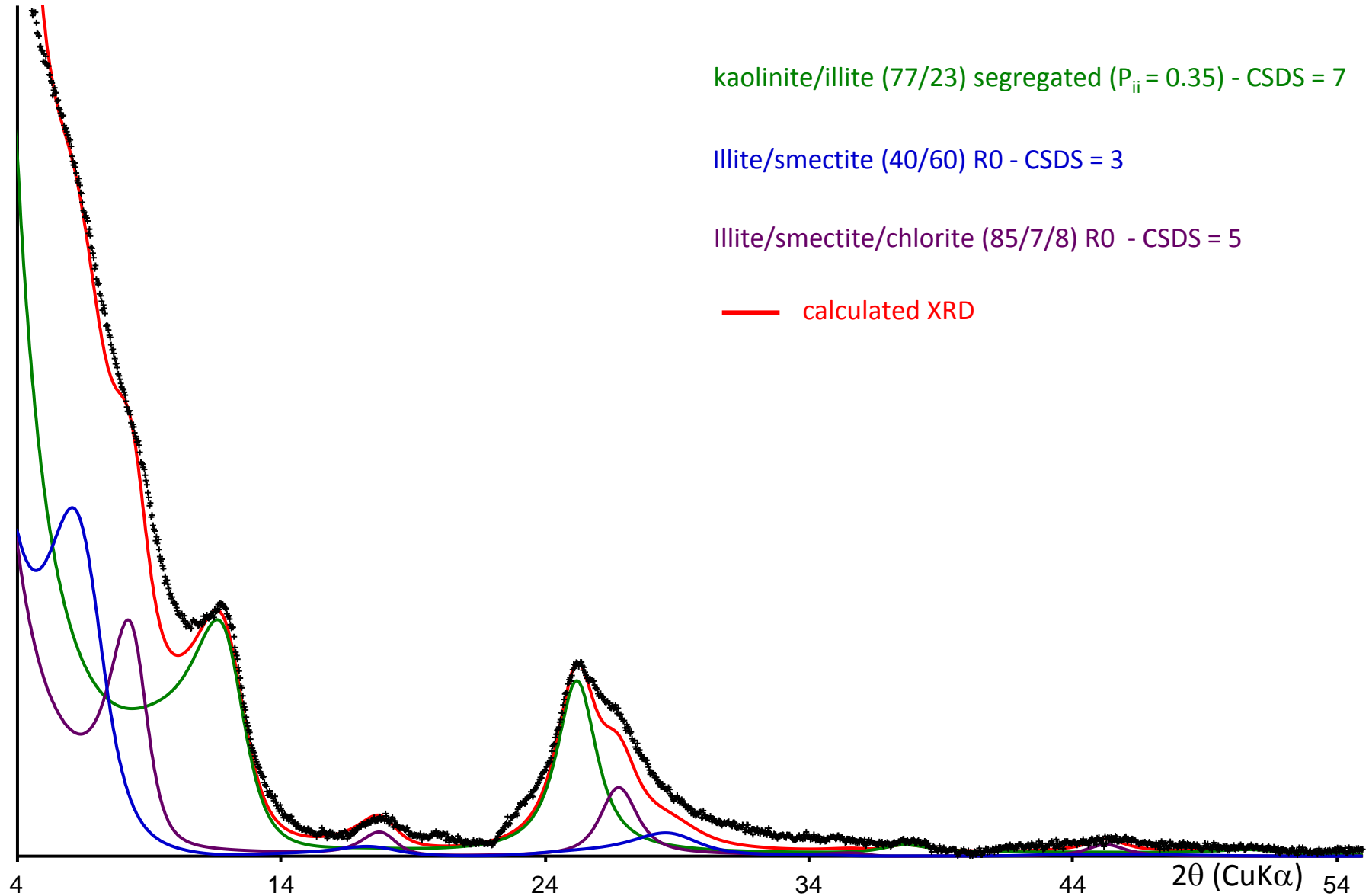
<2.0 μm and < 0.05 μm fractions Sfe horizon / Cambisol – France (AD)



The <math>< 0.05 \mu\text{m}</math> size fraction accounts for $\sim 1/3$ of the global clay size ($< 2 \mu\text{m}$) fraction but has a **diffuse diffraction** signature

Soil clay mineralogy using XRD

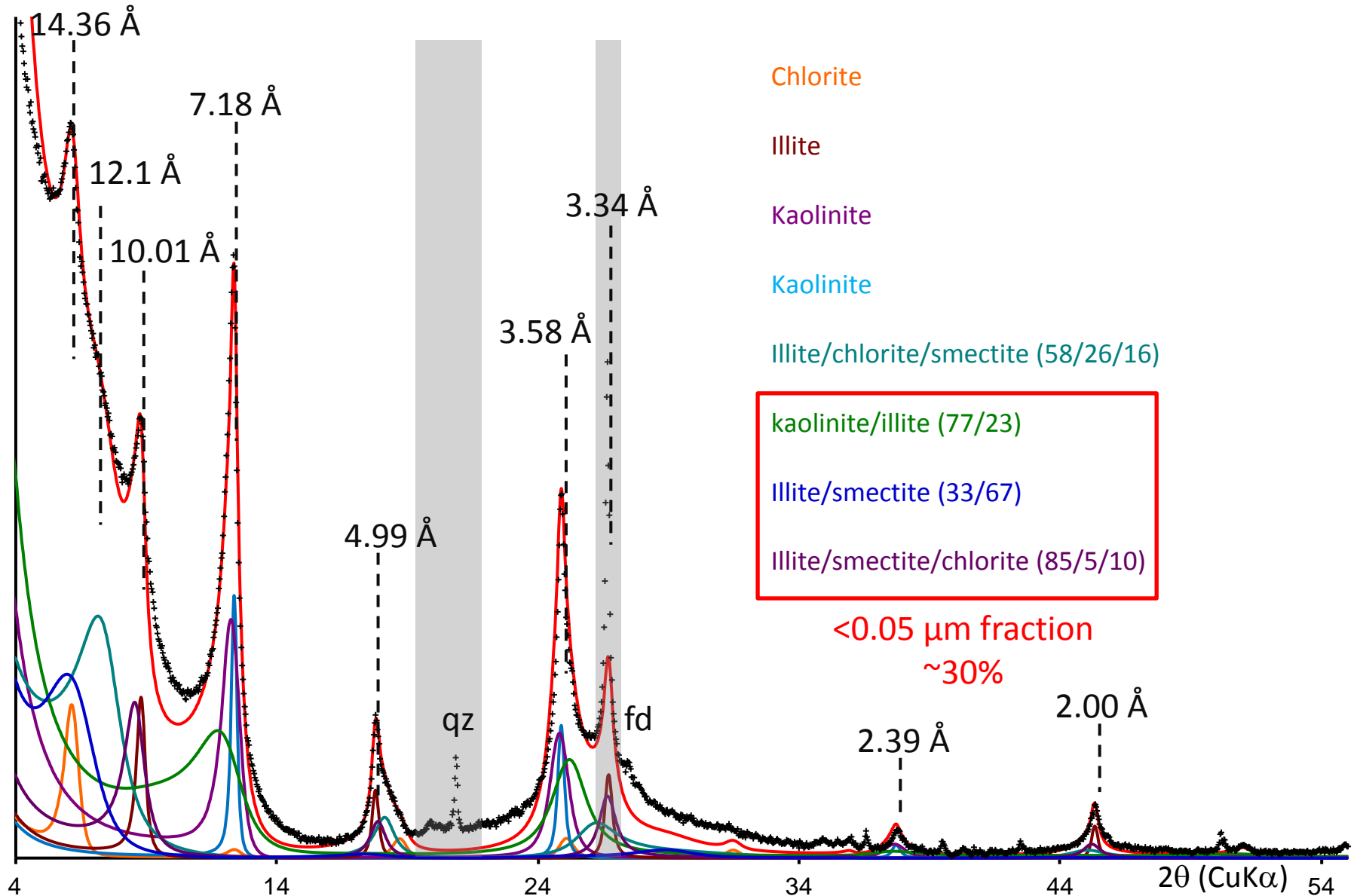
<0.05 μm fraction Sfe horizon / Cambisol – France (AD)



Adapted from Hubert et al. (2012, *Amer. Miner.*, 97, 384)

Soil clay mineralogy using XRD profile modeling

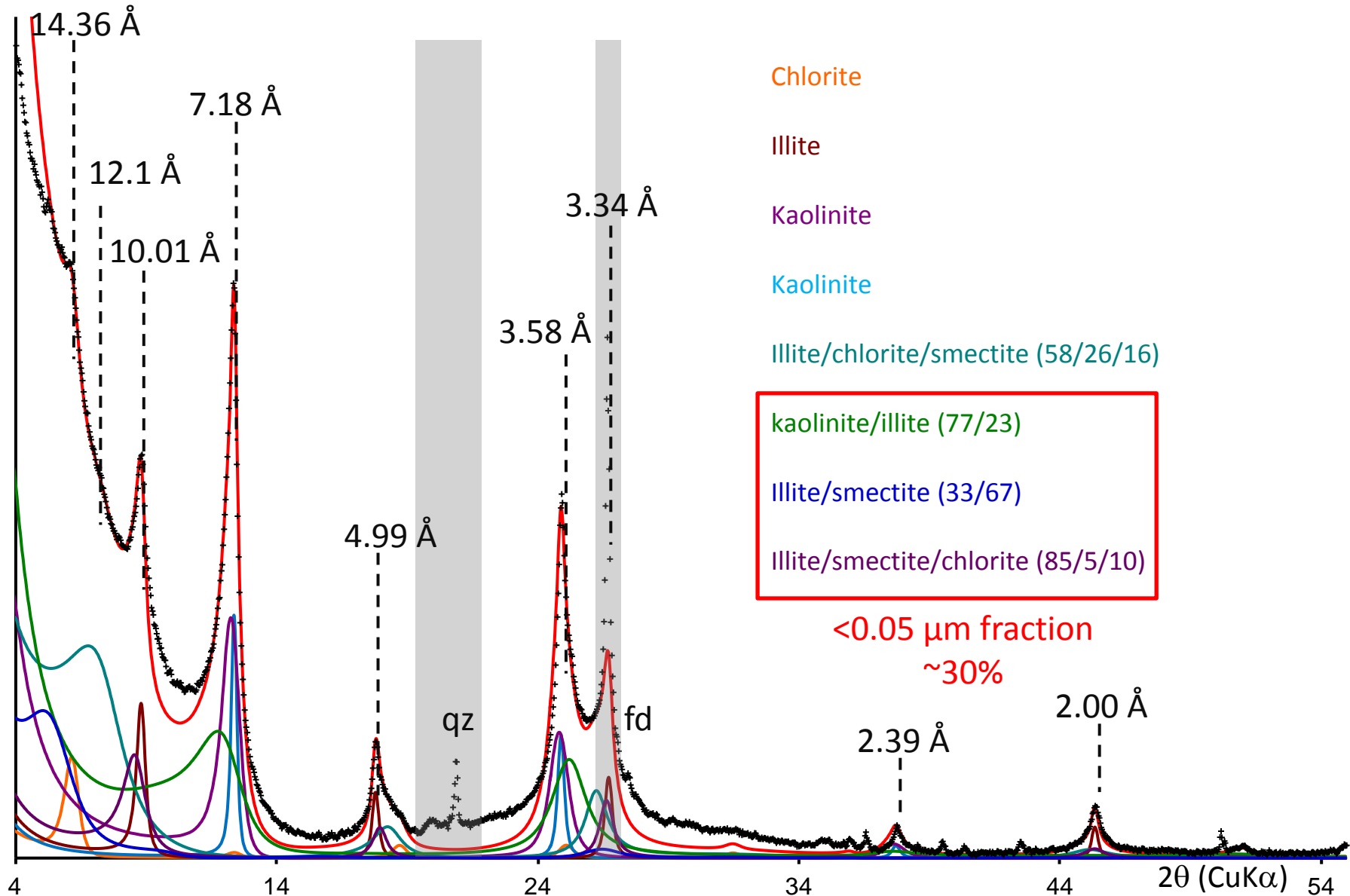
<2.0 μm fraction Sfe horizon / Cambisol – France (AD)



Adapted from Hubert et al. (2012, *Amer. Miner.*, 97, 384)

Soil clay mineralogy using XRD profile modeling

<2.0 μm fraction Sfe horizon / Cambisol – France (EG)



Adapted from Hubert et al. (2012, *Amer. Miner.*, 97, 384)

Soil clay mineralogy

- **Qualitative** agreement is **NOT sufficient** to provide an accurate description of soil clay mineralogy
- **Quantitative profile fitting is essential** (at least to assess how close/far your identification is from a realistic description of your sample)
- Quantitative profile fitting is **possible** on natural samples
- The improved/novel description of the data provides key constraints on the actual nature of reactions and processes taking place in natural environments