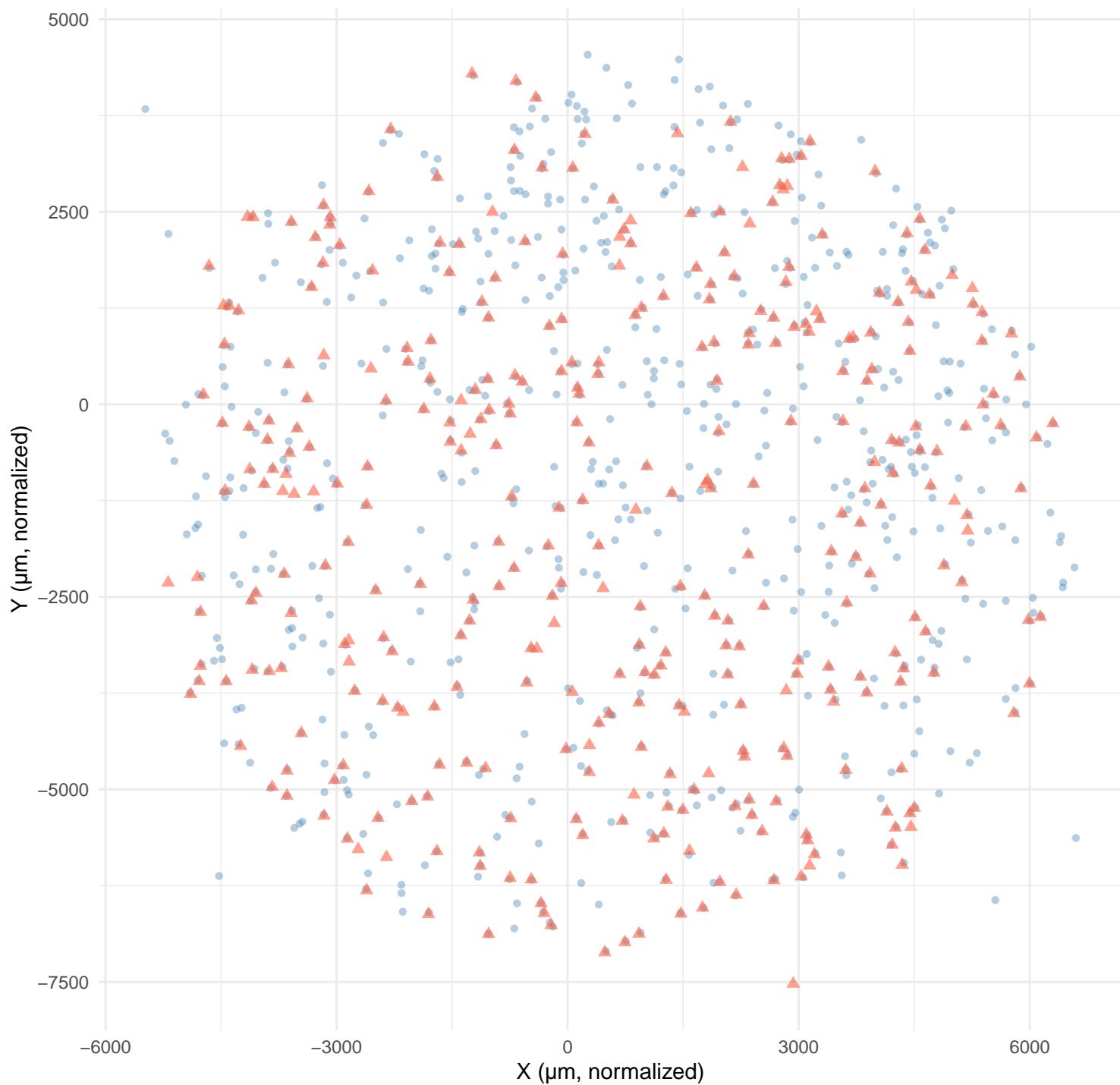
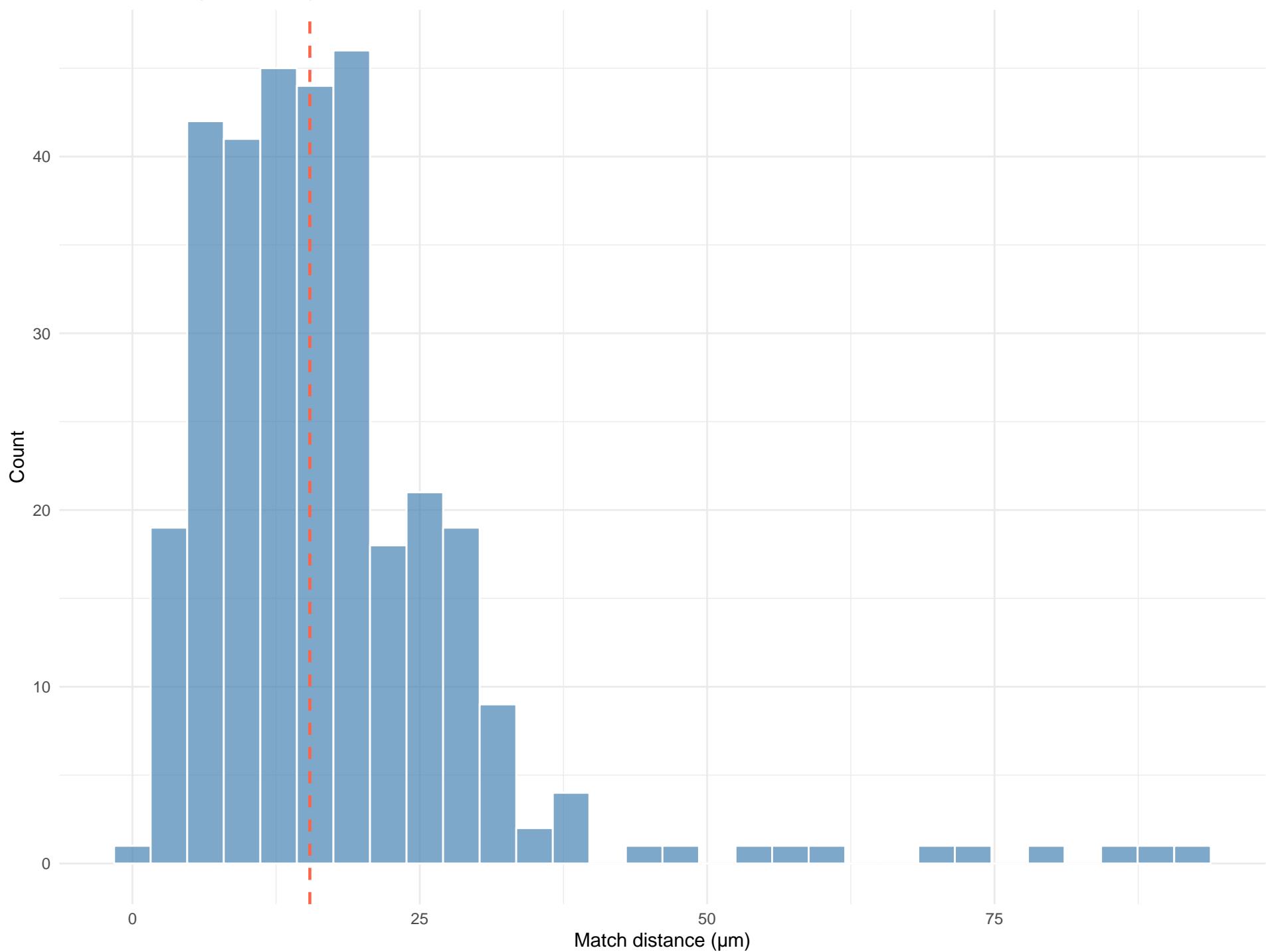


FTIR...Raman Particle Overlay (aligned coordinates)
Red triangles = FTIR, Blue circles = Raman, Lines = matched pairs

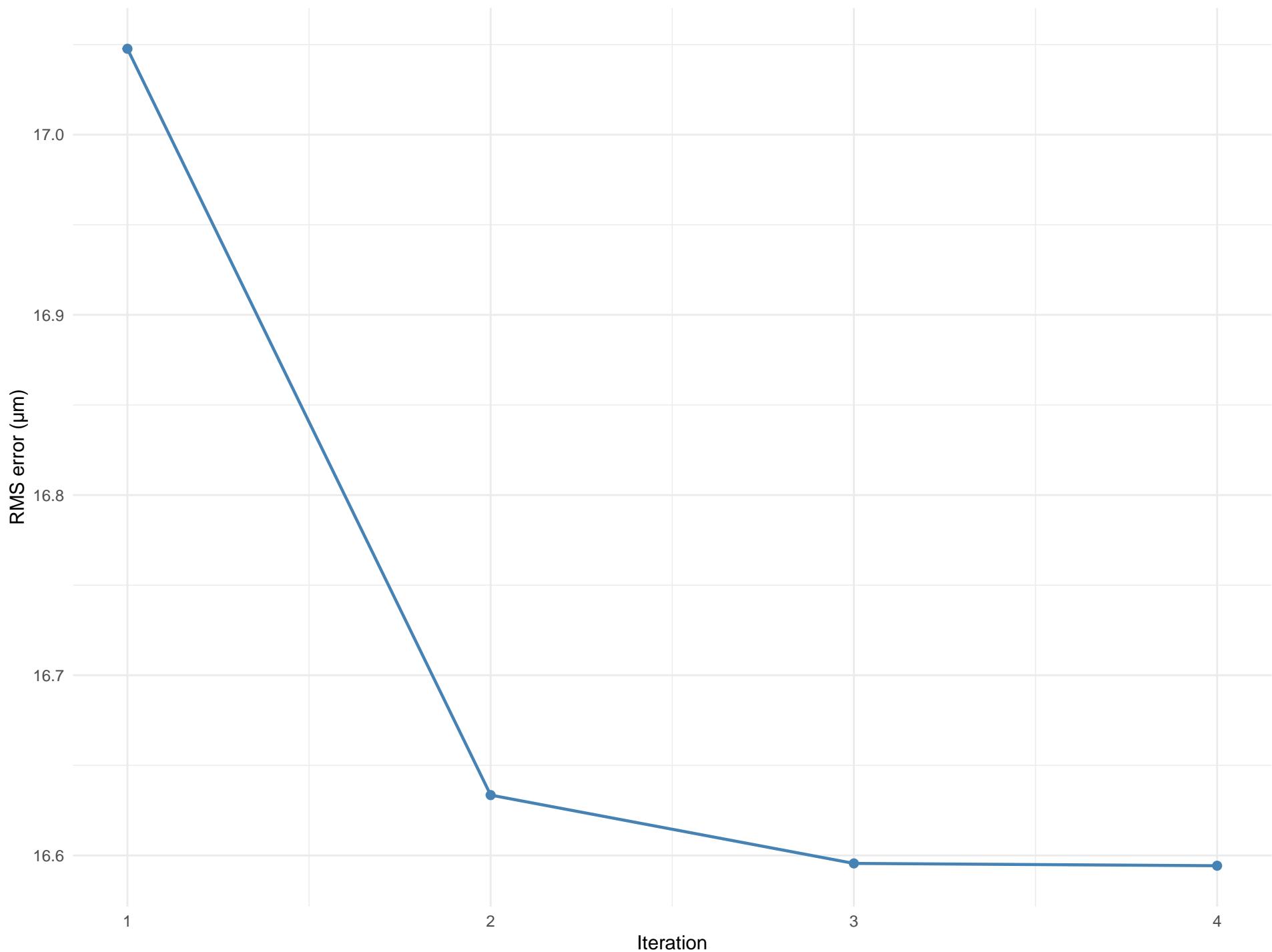


Match Distance Distribution
Median = 15.44 μm , n = 322 pairs



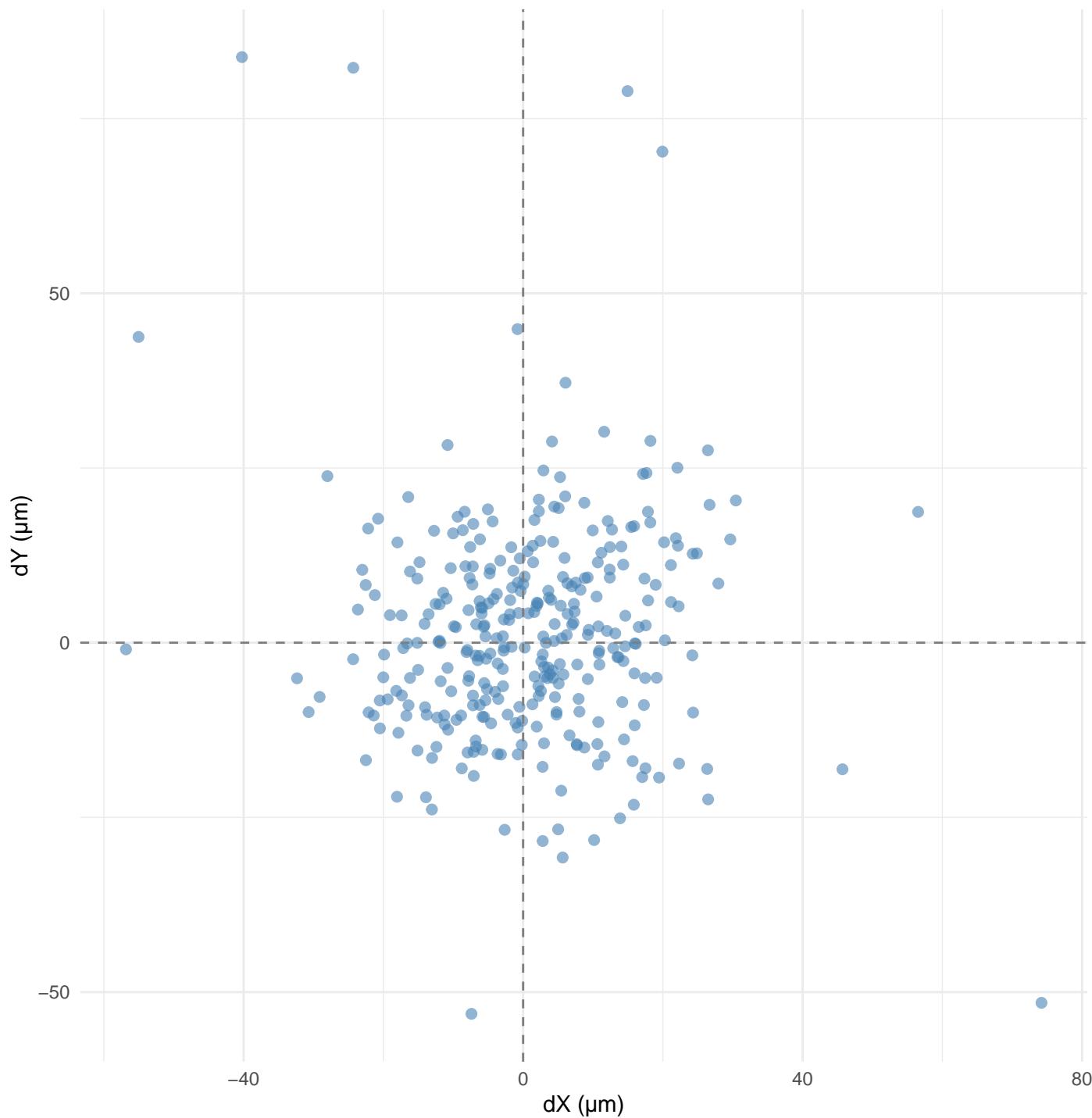
ICP Convergence

Converged: TRUE, Iterations: 4



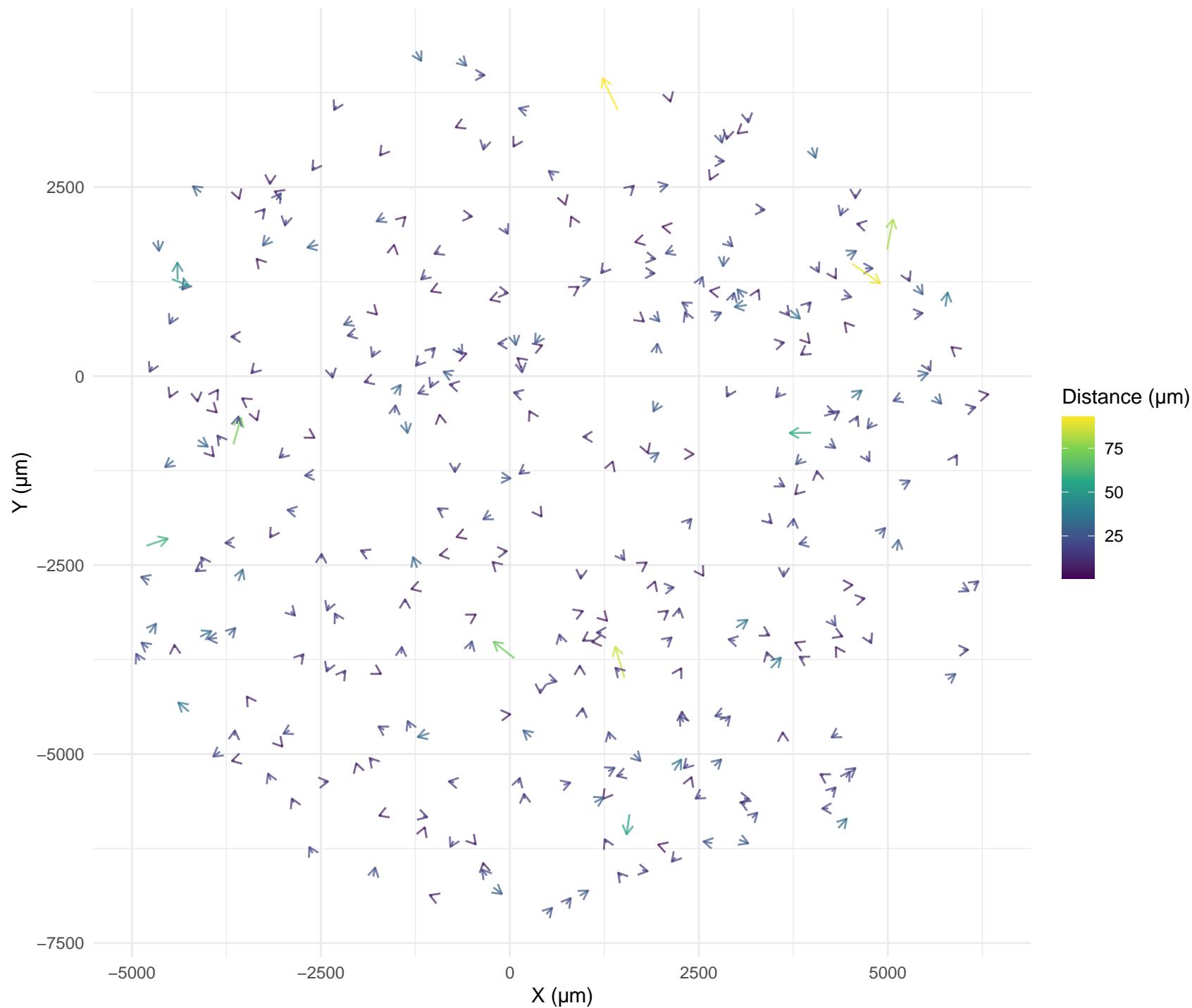
Alignment Residuals

Offset from FTIR (transformed) to Raman (nearest match)



Residual Vector Field

Arrows magnified 5x | Systematic patterns indicate local distortion



Material Confusion Matrix (FTIR vs Raman)

Exact: 0% | Family: 11.5% | Family+: 11.5%

FTIR material

PROTEIN

83

7

1

43

0

PP

0

0

0

0

1

PET

0

0

18

0

0

CELLULOSE

1

18

2

0

0

CAB

PA

PET

POLYACRYLAMIDE/ACRYLATE

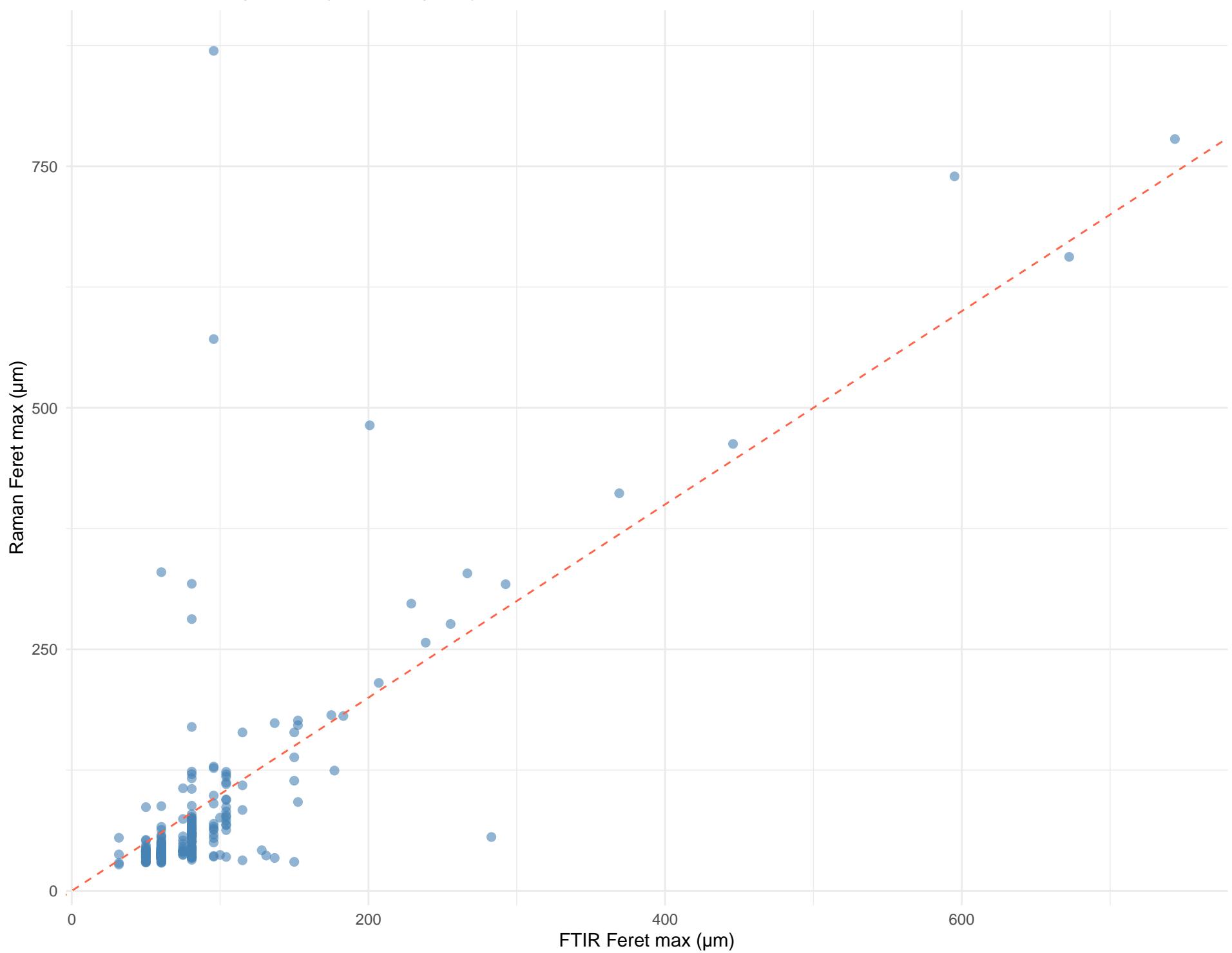
PP

Raman material

Count

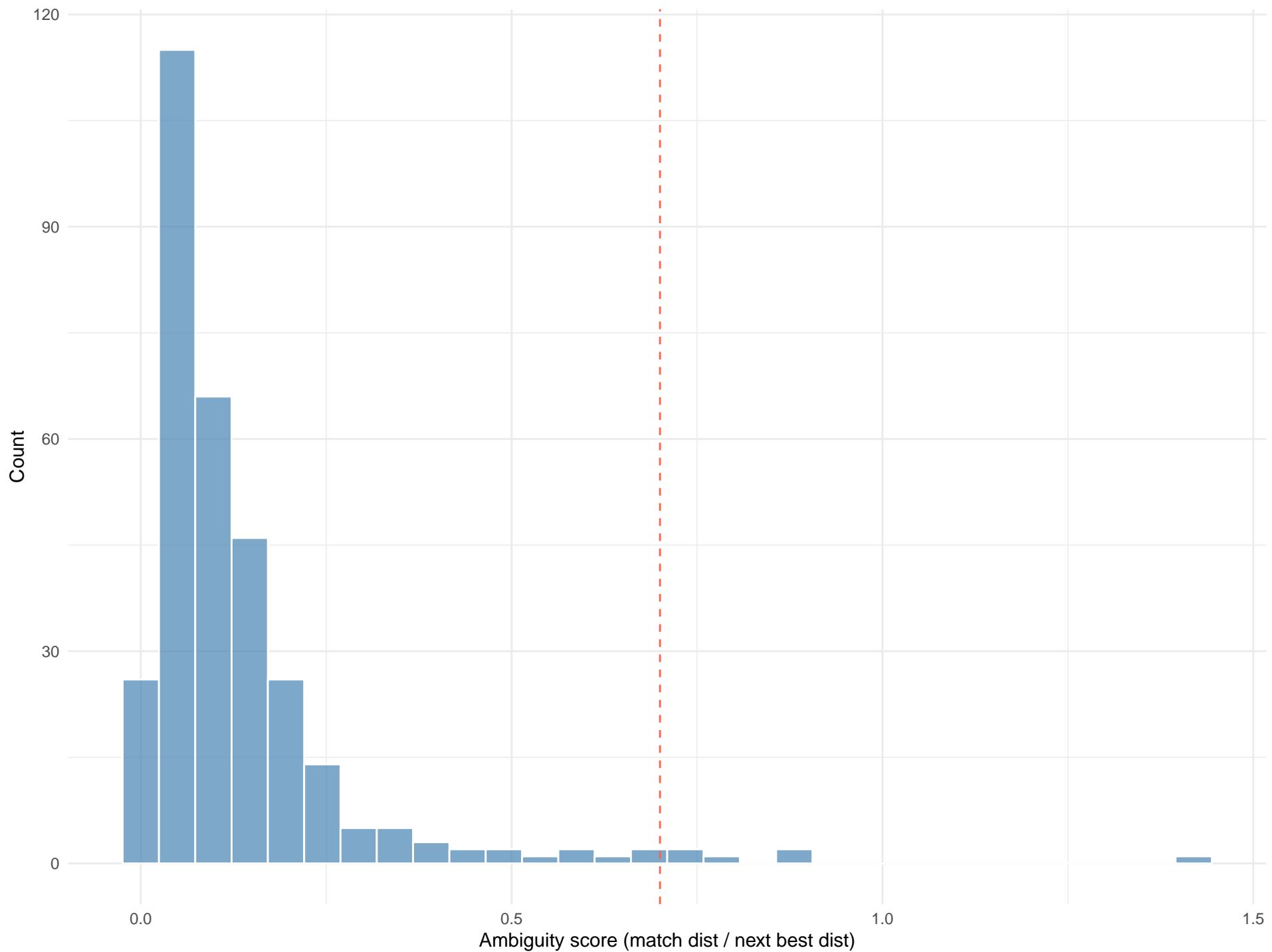


Particle Size Comparison (matched pairs)



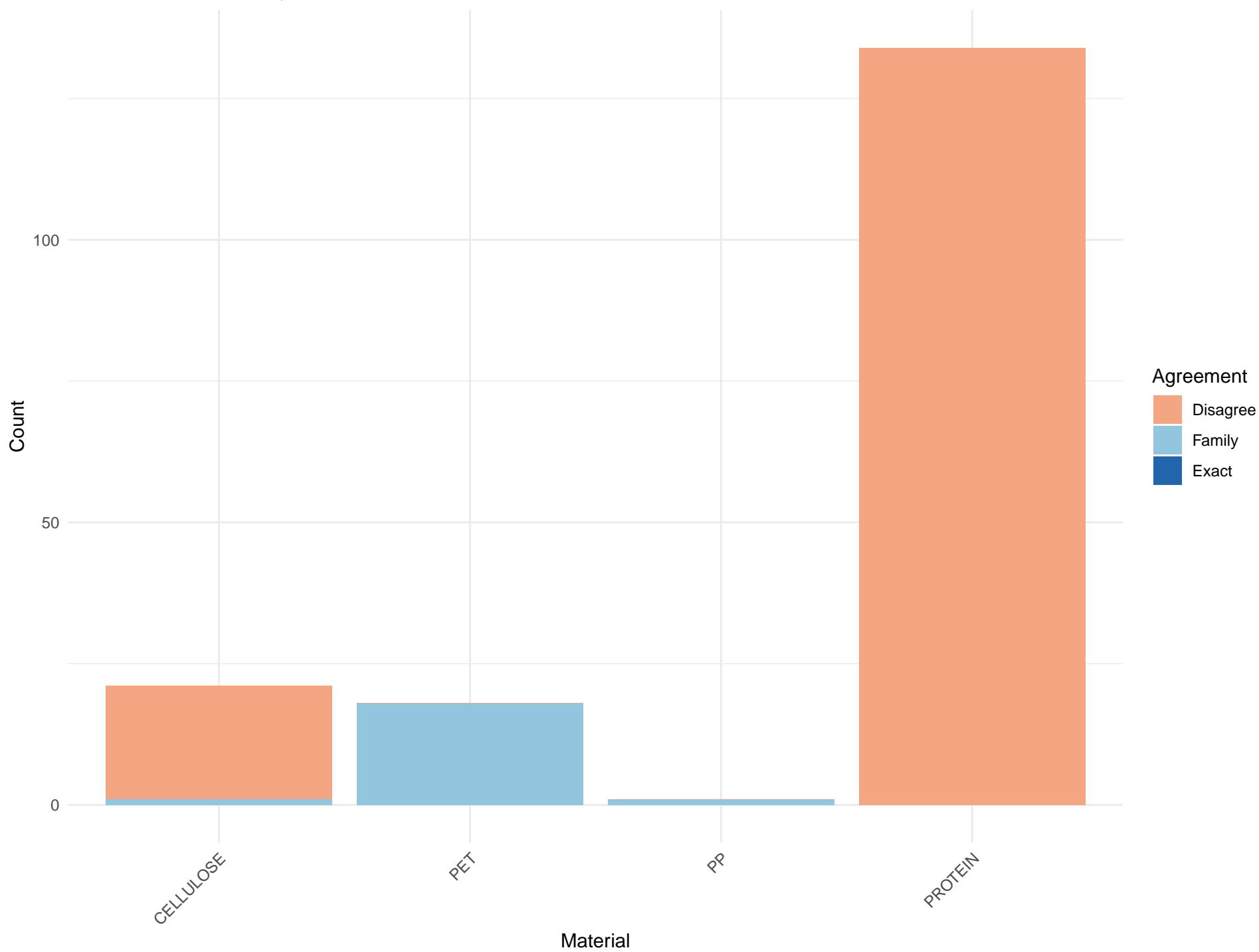
Match Ambiguity Score Distribution

Flagged (>0.7): 7 of 322 pairs



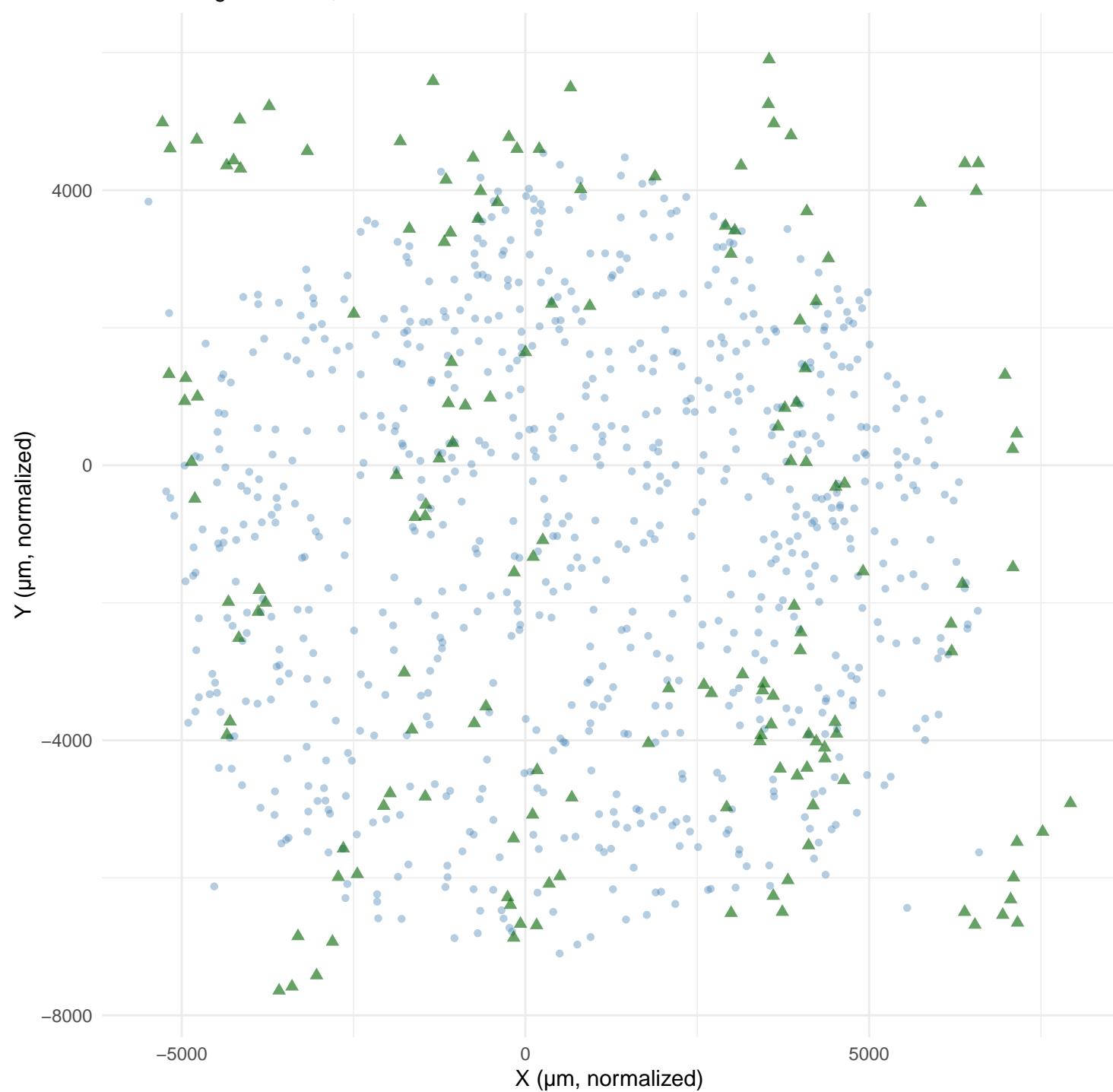
Tiered Agreement by Material

Overall: Exact 0%, Family+ 11.5%



LDIR...Raman Particle Overlay (aligned coordinates)

Green triangles = LDIR, Blue circles = Raman



Material Confusion Matrix (LDIR vs Raman)

Exact: 0% | Family: 6.7% | Family+: 6.7%

