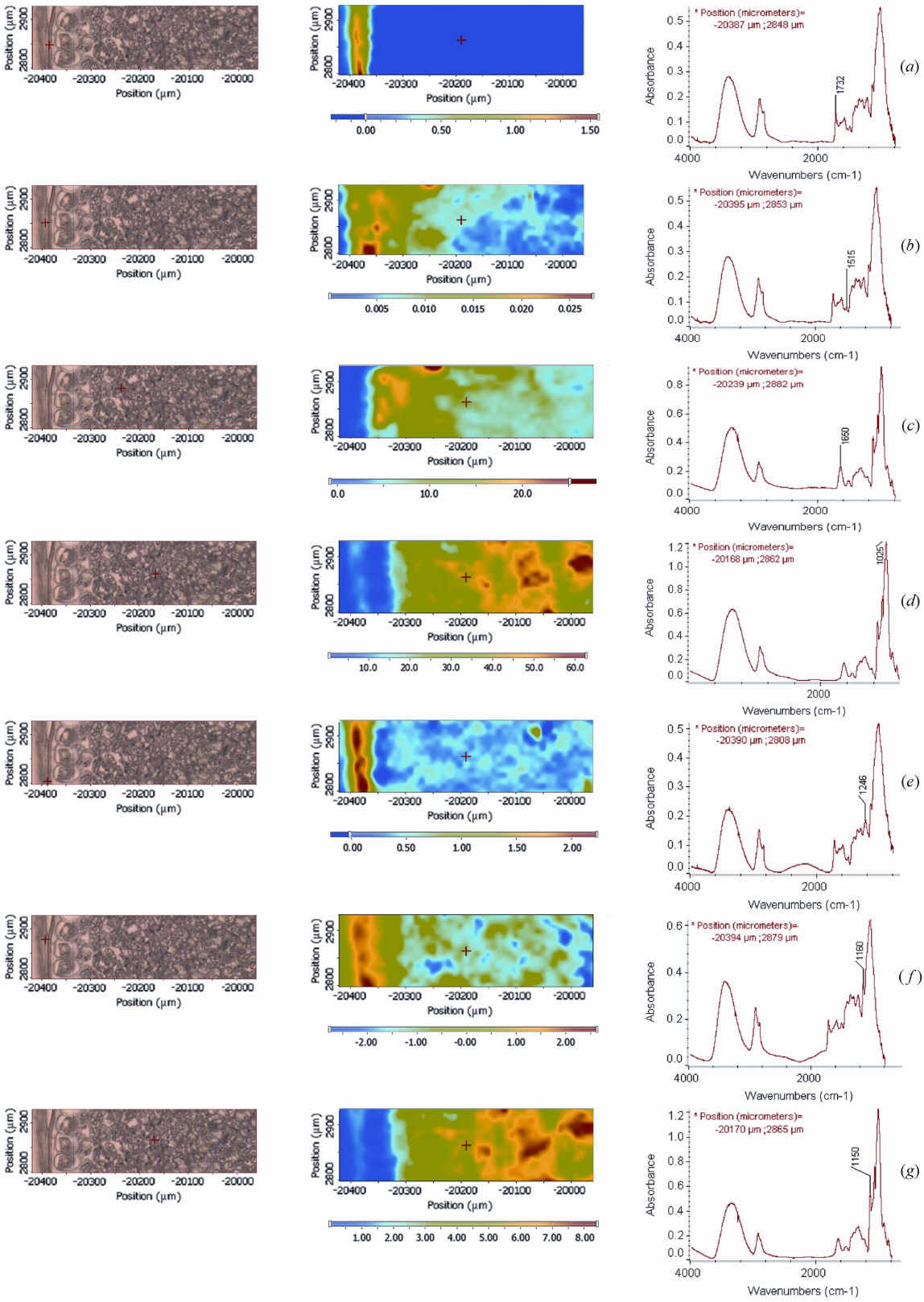

Position (µm)
Absorbance
Wavenumbers (cm-1)
* Position (micrometers)= -20387 µm ;2848 µm
1732
(a)
* Position (micrometers)= -20395 µm ;2853 µm
1515
(b)
* Position (micrometers)= -20239 µm ;2882 µm
1650
(c)
* Position (micrometers)= -20168 µm ;2862 µm
1025
(d)
* Position (micrometers)= -20390 µm ;2808 µm
1246
(e)
* Position (micrometers)= -20394 µm ;2879 µm
1160
(f)
* Position (micrometers)= -20170 µm ;2865 µm
1150
(g)

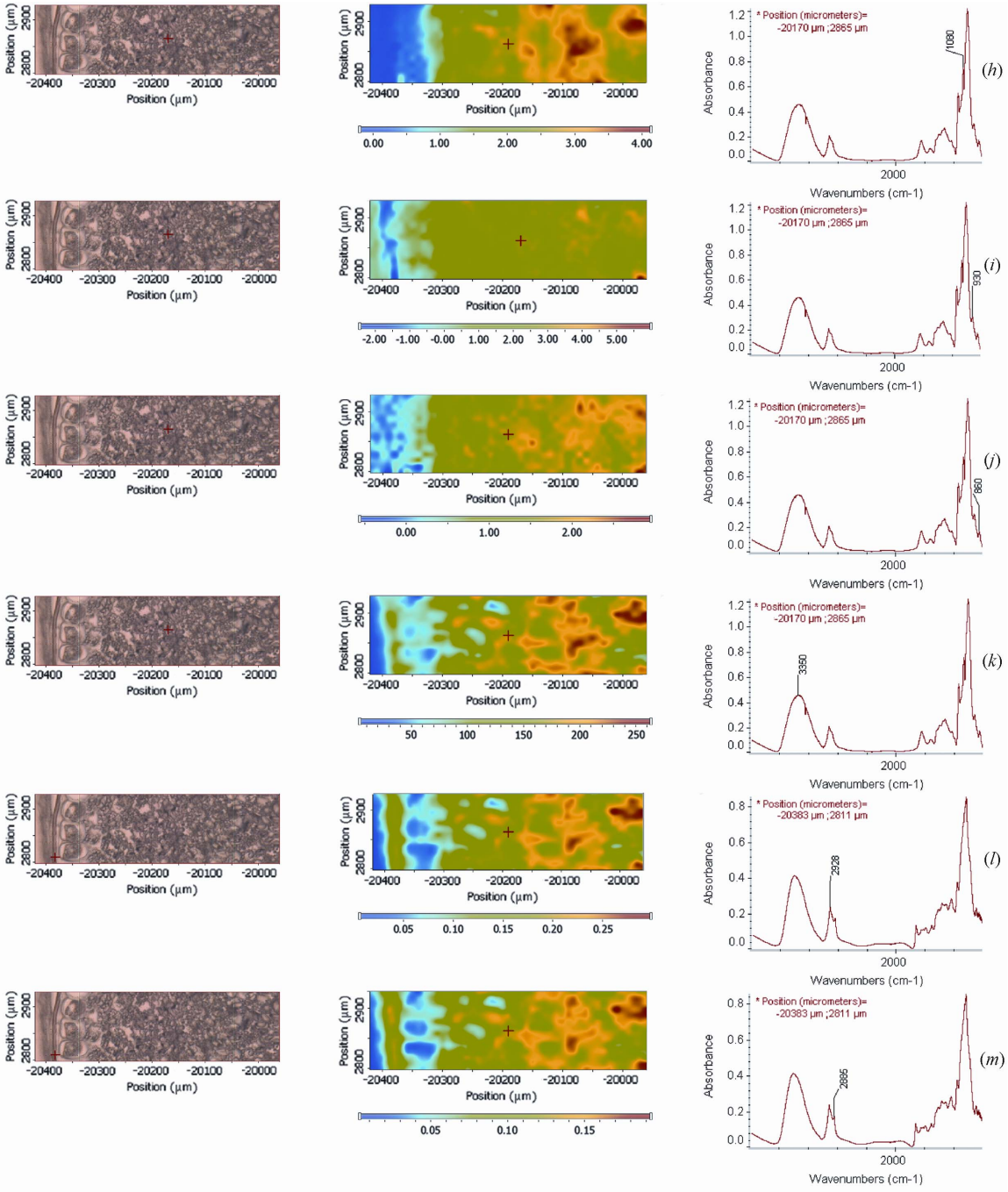
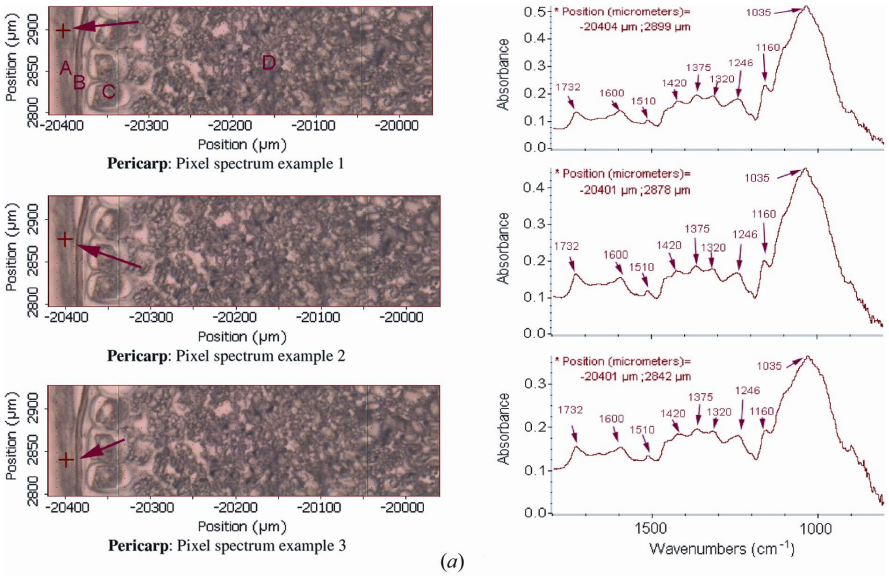


Figure 2 Molecular functional group images of the wheat seed tissue from the pericarp (outside), seed coat, aleurone layer and endosperm. From left to right: visible image; chemical image; spectra corresponding to the pixel at the cross-hair in the visible image (spectrum pixel size 10 µm × 10 µm). Area under (*a*) 1732 cm^{-1} peak (carbonyl C=O); (*b*) 1515 cm^{-1} peak (aromatic compound); (*c*) 1650 cm^{-1} peak (amide I); (*d*) 1025 cm^{-1} peak (starch); (*e*) 1246 cm^{-1} peak (cellulosic materials); (*f*) 1160 cm^{-1} peak (CHO); (*g*) 1150 cm^{-1} peak (CHO); (*h*) 1080 cm^{-1} peak (CHO); (*i*) 930 cm^{-1} peak (CHO); (*j*) 860 cm^{-1} peak (CHO); (*k*) 3350 cm^{-1} peak (OH and NH: protein and CHO); (*l*) 2929 cm^{-1} peak (CH2); and (*m*) 2885 cm^{-1} peak (CH3).

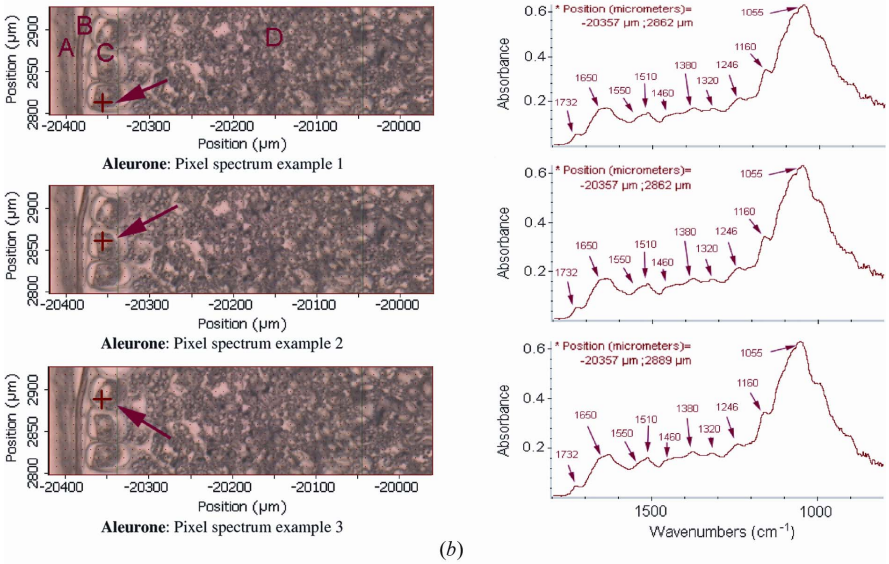


Pericarp: Pixel spectrum example 1

Pericarp: Pixel spectrum example 2

Pericarp: Pixel spectrum example 3

(*a*)

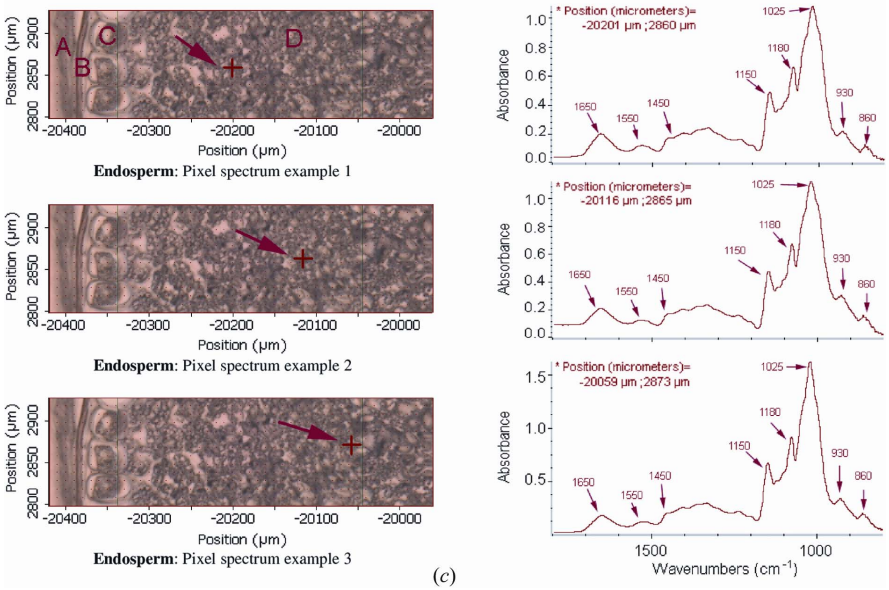


Aleurone: Pixel spectrum example 1

Aleurone: Pixel spectrum example 2

Aleurone: Pixel spectrum example 3

(*b*)



Endosperm: Pixel spectrum example 1

Endosperm: Pixel spectrum example 2

Endosperm: Pixel spectrum example 3

(*c*)

Figure 4 Ultra-spatial synchrotron-based spectra of (*a*) the pericarp, (*b*) the aleurone layer, (*c*) the endosperm of wheat tissues selected from corresponding areas of the visible images, showing that similar morphological parts exhibit similar spectral characteristics and chemical composition (A = pericarp; B = seed coat; C = aleurone layer; D = endosperm) .