

초분광 측정 데이터 – 김 이물 검사

SNAPSCAN VNIR (470 ~ 900nm)

촬영 조건

- 초분광 카메라

- 모델 : SNAPSCAN VNIR
- 파장 범위 : 470 ~ 900nm
- 분광 밴드 : 150개 raw band
- 최대 공간 해상도
: 3650 x 2048 픽셀
- 촬영 해상도
: 2048 x 2560 (1x binning)
: 1024 x 1280 (2x binning)
- 렌즈
: F2.0 / 24mm
: 조리개 2.8 설정
- 촬영 거리 : 약 170mm
- 김 시료 크기 : 100 x 90mm

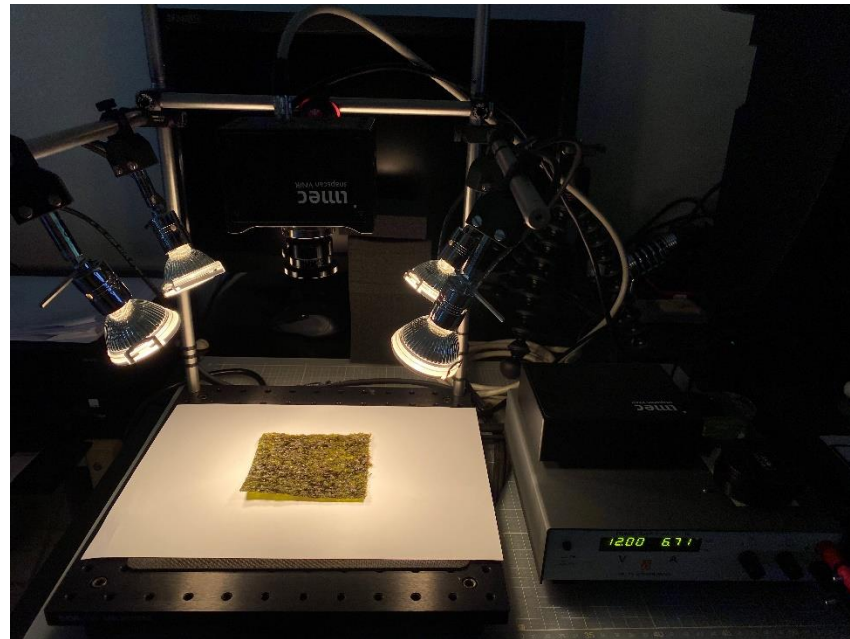
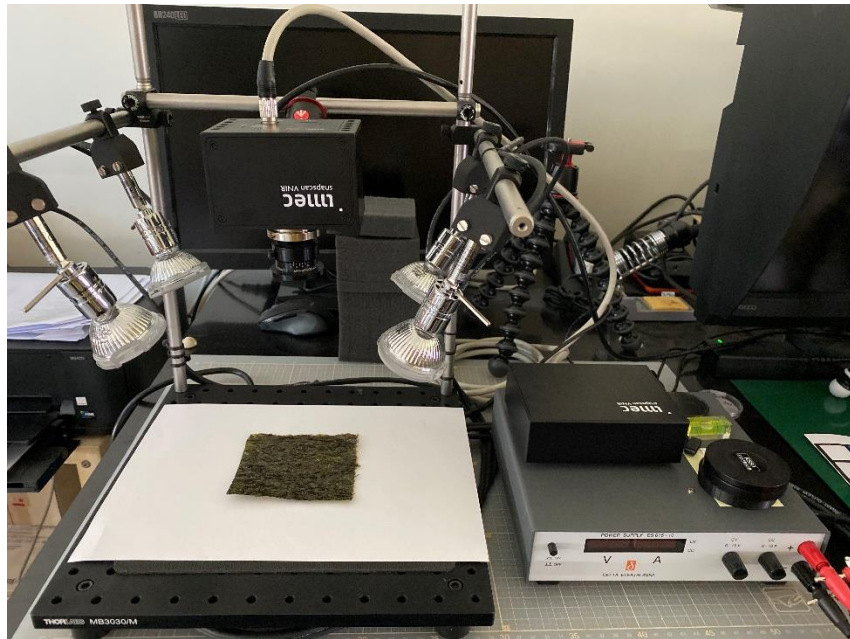
- 조명

- 오스람 20W 할로겐 램프
4EA

- 소프트웨어

- 촬영 : HSI Snapscan
- 분석 : HSI Studio

촬영 조건



1x binning – 2048 x 2560 resolution



컬러 이미지 – without hair



컬러 이미지 – with hair

1x binning – 2048 x 2560 resolution

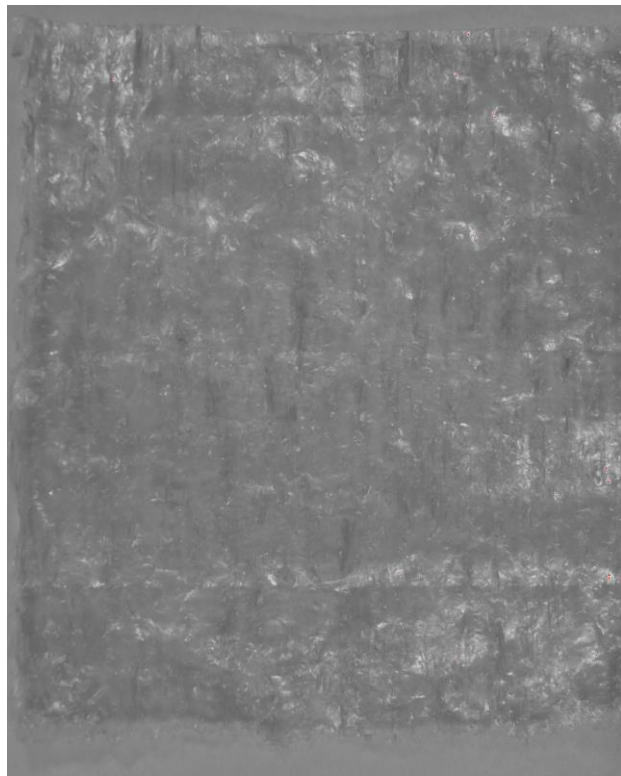


NDVI 이미지 – without hair

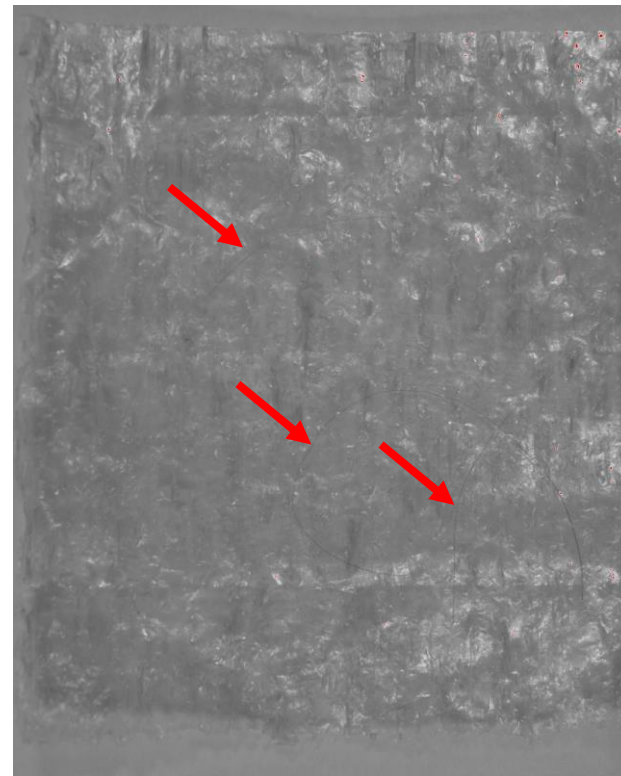


NDVI 이미지 – with hair

1x binning – 2048 x 2560 resolution

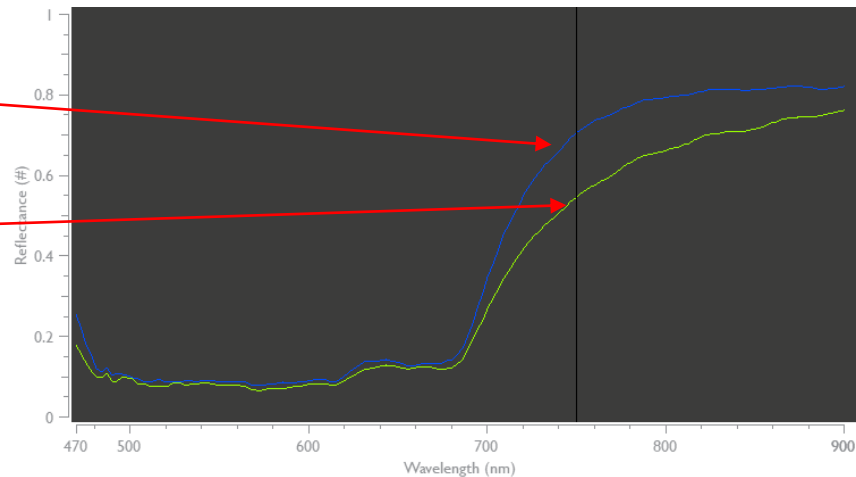
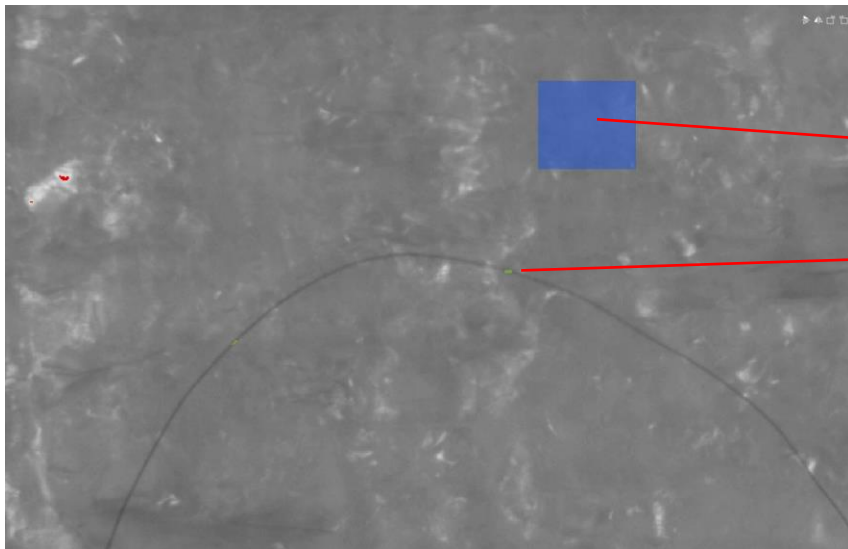


750nm 이미지 – without hair



750nm 이미지 – with hair

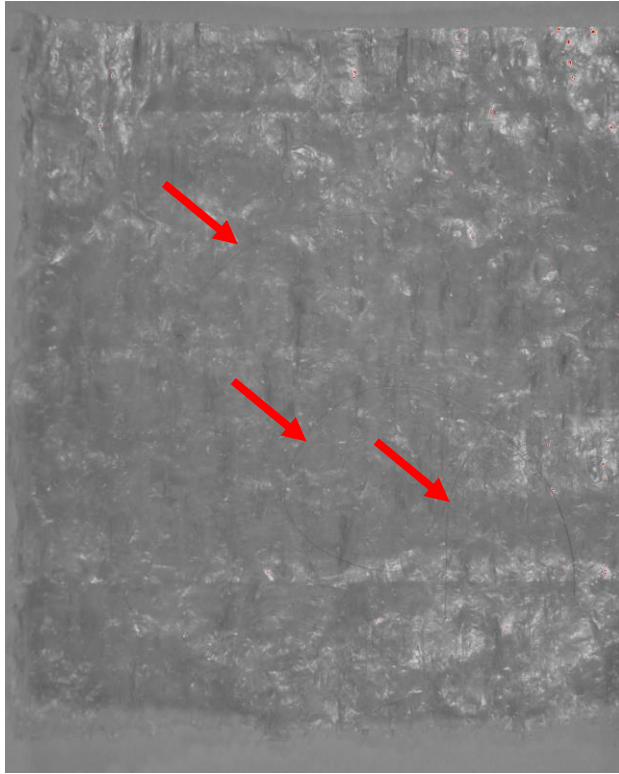
1x binning – 2048 x 2560 resolution



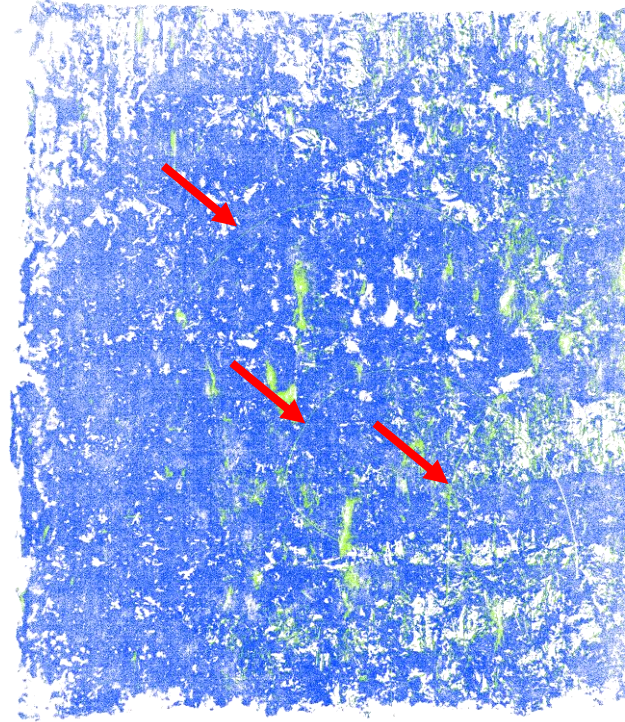
750nm 이미지상에서의 ROI 설정

Blue : 김, Green : 머리카락

1x binning – 2048 x 2560 resolution

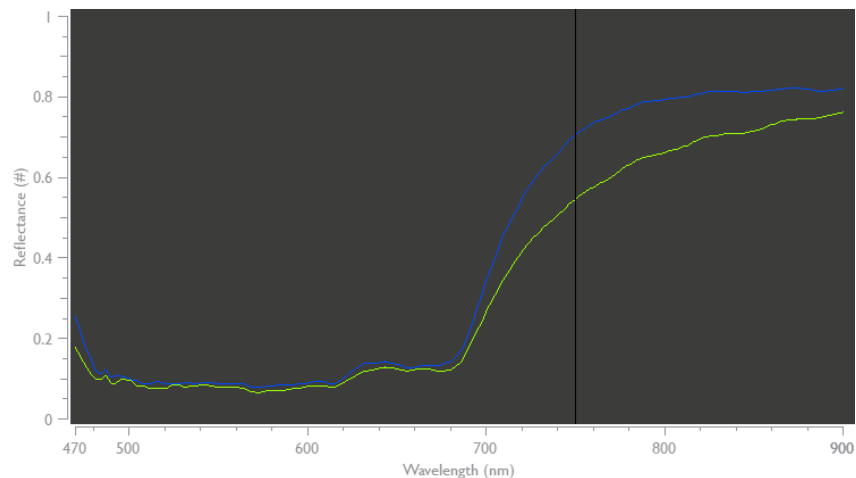


750nm 이미지 – with hair



SAM Classification

1x binning – 2048 x 2560 resolution



파장(nm)	검	머리카락
470.00	0.1256	0.1085
472.89	0.1098	0.0940
475.77	0.0949	0.0795
478.66	0.0818	0.0683
481.54	0.0722	0.0614
484.43	0.0695	0.0704
487.32	0.0759	0.0876
490.20	0.0715	0.0792
493.09	0.0711	0.0735
495.97	0.0721	0.0663
498.86	0.0704	0.0601
501.75	0.0665	0.0600
504.63	0.0615	0.0691
507.52	0.0600	0.0718
510.40	0.0599	0.0663
513.29	0.0590	0.0608
516.17	0.0582	0.0561
519.06	0.0566	0.0583
521.95	0.0562	0.0616
524.83	0.0565	0.0607
527.72	0.0568	0.0611
530.60	0.0566	0.0645
533.49	0.0566	0.0679
536.38	0.0566	0.0683
539.26	0.0579	0.0732
542.15	0.0594	0.0759
545.03	0.0596	0.0710
547.92	0.0583	0.0689
550.81	0.0573	0.0689
553.69	0.0565	0.0710
556.58	0.0555	0.0691
559.46	0.0542	0.0654
562.35	0.0522	0.0626
565.24	0.0501	0.0603
568.12	0.0488	0.0585
571.01	0.0481	0.0577
573.89	0.0476	0.0576
576.78	0.0471	0.0600
579.66	0.0472	0.0604
582.55	0.0480	0.0588
585.44	0.0493	0.0615
588.32	0.0502	0.0645
591.21	0.0510	0.0666
594.09	0.0517	0.0677
596.98	0.0531	0.0687
599.87	0.0552	0.0695
602.75	0.0572	0.0711
605.64	0.0592	0.0729
608.52	0.0591	0.0734
611.41	0.0550	0.0711
614.30	0.0518	0.0693
617.18	0.0580	0.0749
620.07	0.0673	0.0828
622.95	0.0765	0.0907
625.84	0.0858	0.0986
628.73	0.0950	0.1065

2x binning – 1024 x 1280 resolution



컬러 이미지 – with hair

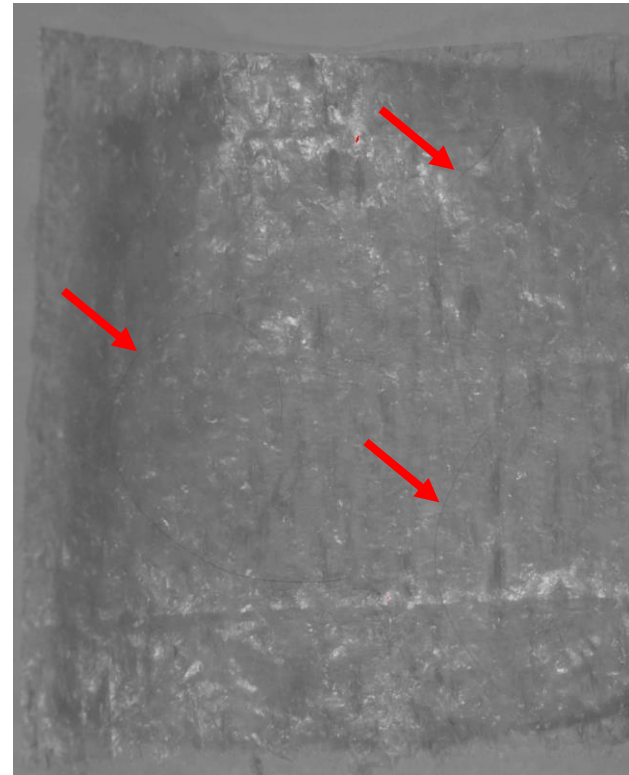


NDVI 이미지 – with hair

2x binning – 1024 x 1280 resolution



컬러 이미지 – with hair



750nm 이미지 – with hair

결과

- 700nm 이상 영역에서 김과 머리카락의 반사율 다르게 나타남
- 대략 730nm 이상 영역에서의 Single band 이미지를 통해 머리카락 확인 가능
- Full 해상도(2048픽셀)와 2x binning(1024픽셀) 해상도에서 모두 머리카락 확인됨
- NDVI(식생지수), SAM 분류 결과 등에서는 분류 결과가 명확하지 않음
- 반사율 특성을 구분 지을 수 있는 적절한 지수(index) 산출을 통해 머리카락 또는 기타 이물에 대한 분류가 가능할 것으로 보임

THANK YOU
