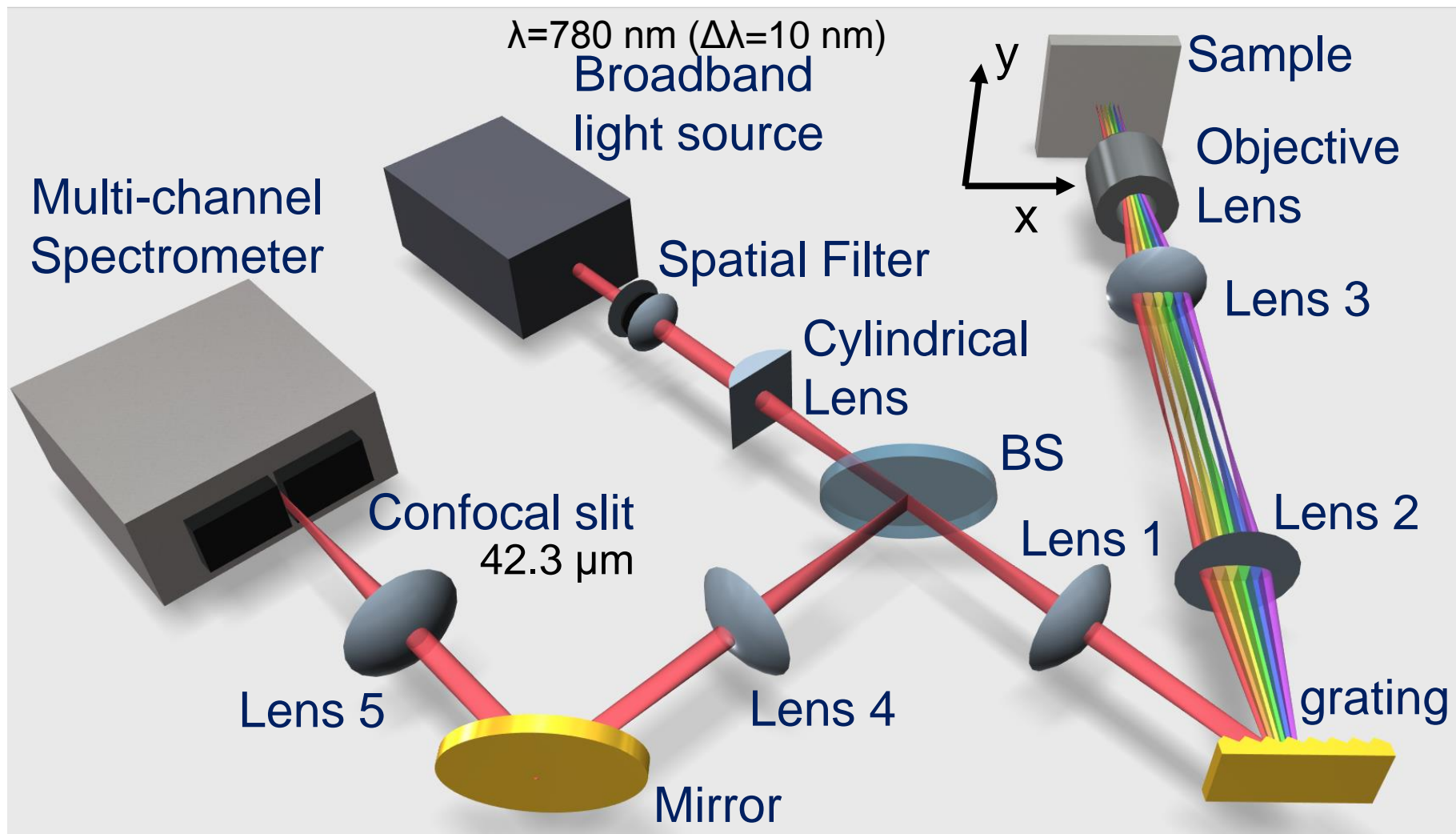
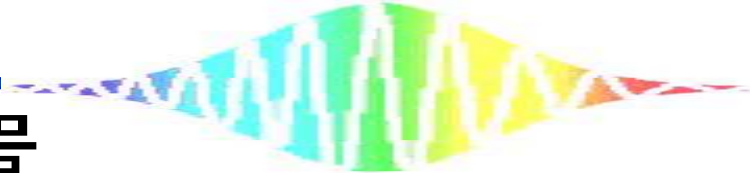


共焦点顕微鏡 with マルチチャンネル分光器 進捗状況

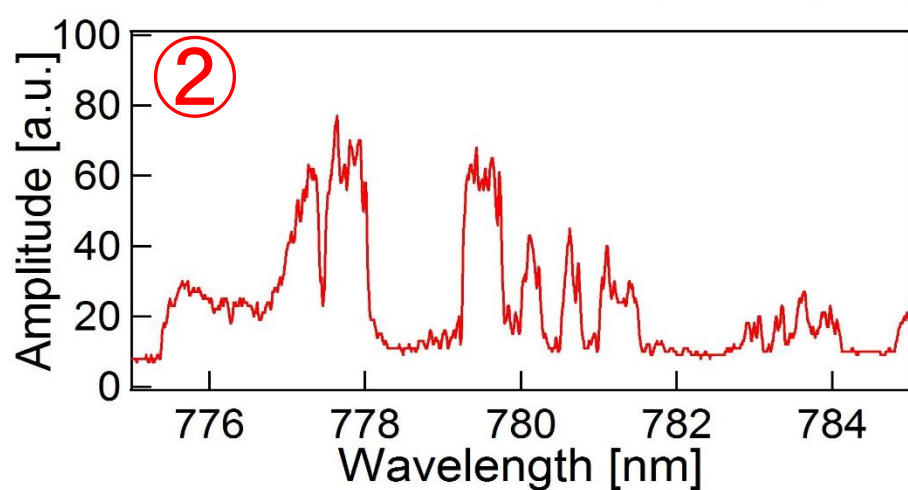
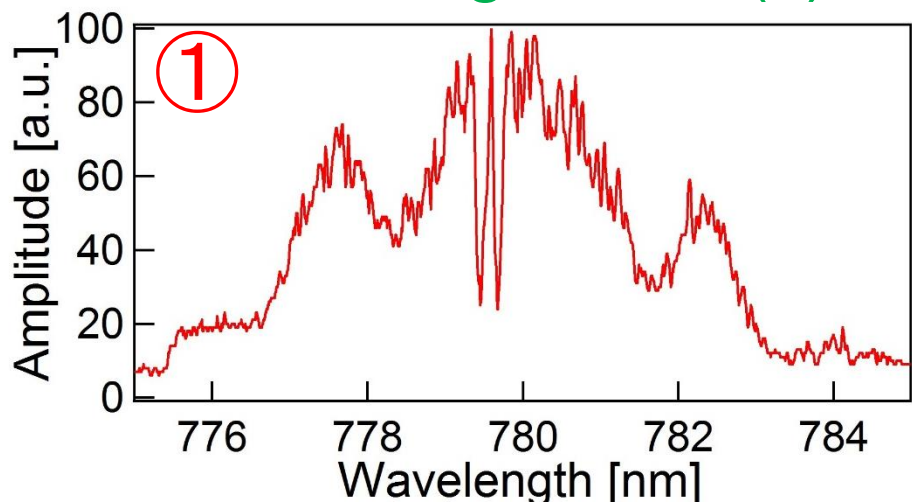
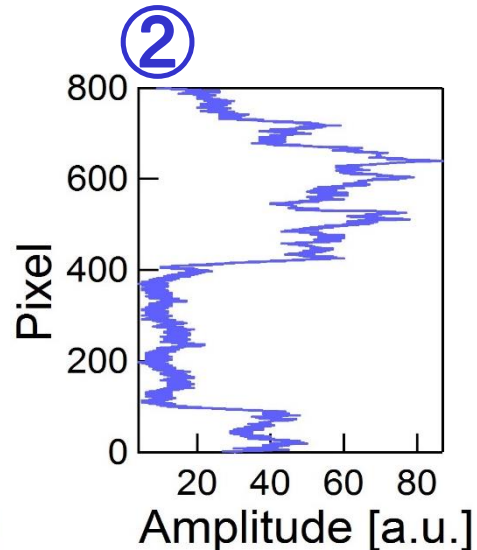
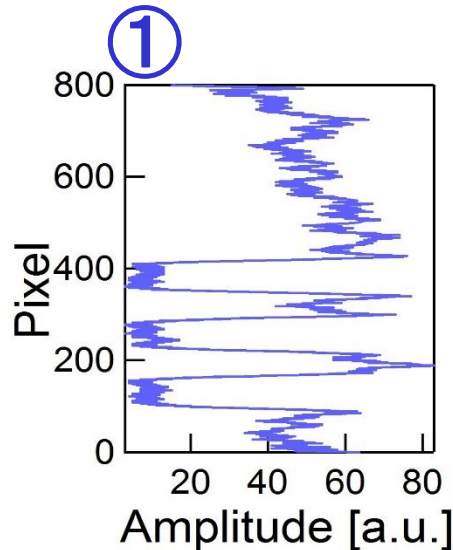
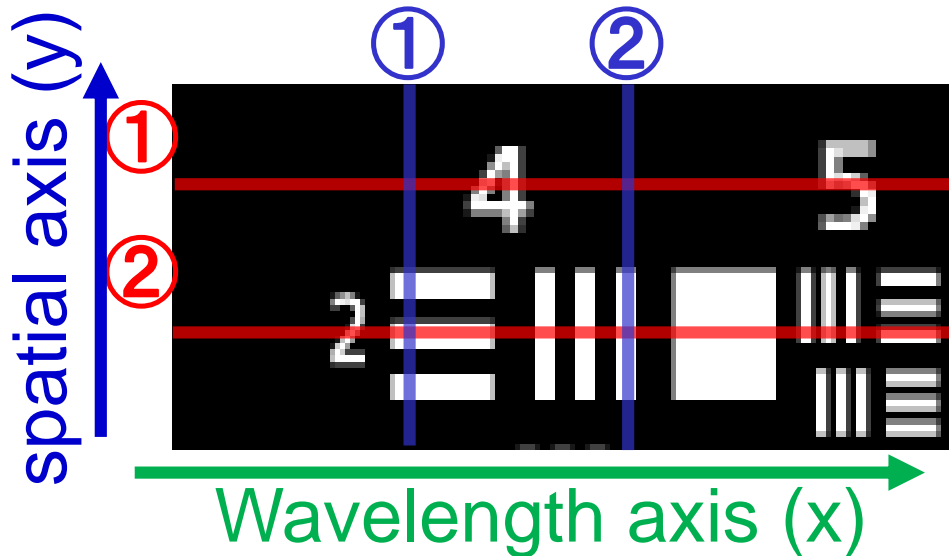
2015/10/09 ERATO meeting

宮本、長谷

実験装置



テストチャート反射スペクトル

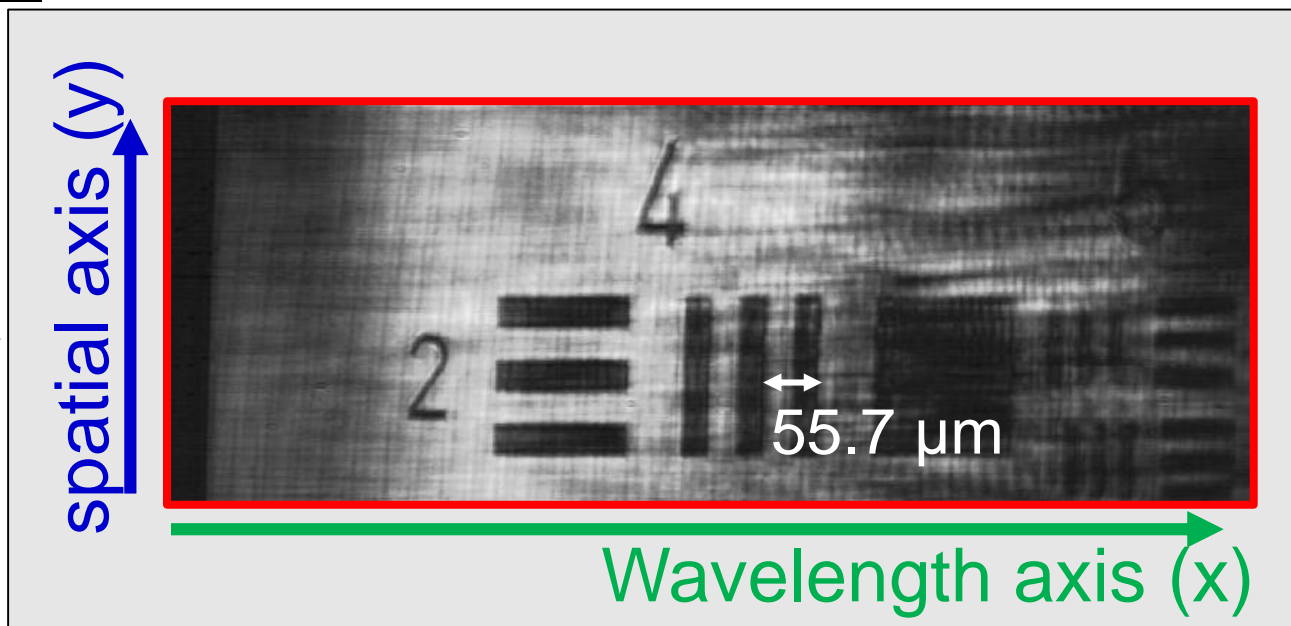
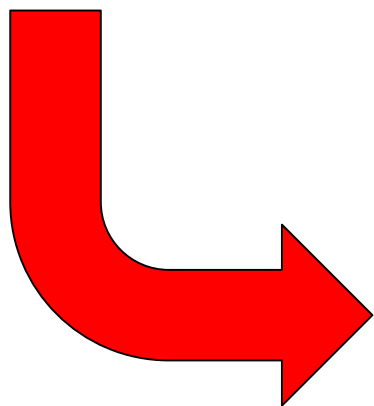


サンプルの情報が波長に重畳している

テストチャート反射イメージ



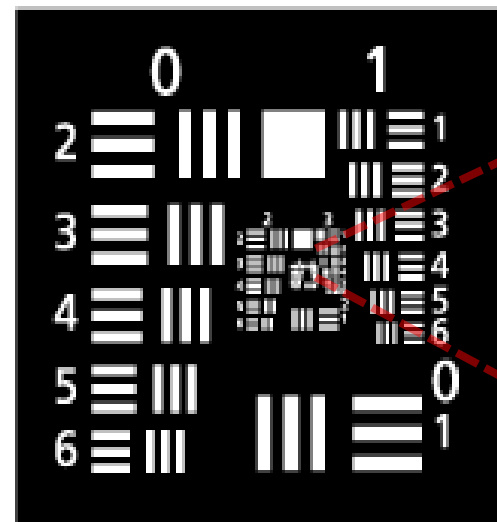
image size :
0.35 mm*1.18 mm



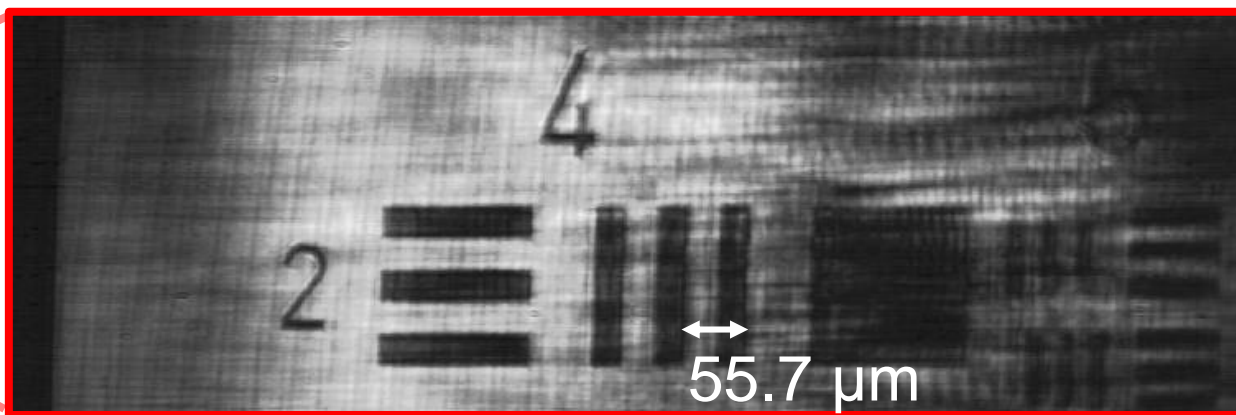
ラインビーム照明+波長/空間変換により、
ワンショットでリアルタイムに像を取得

リアルタイムイメージング

image size : 0.35 mm * 1.18 mm



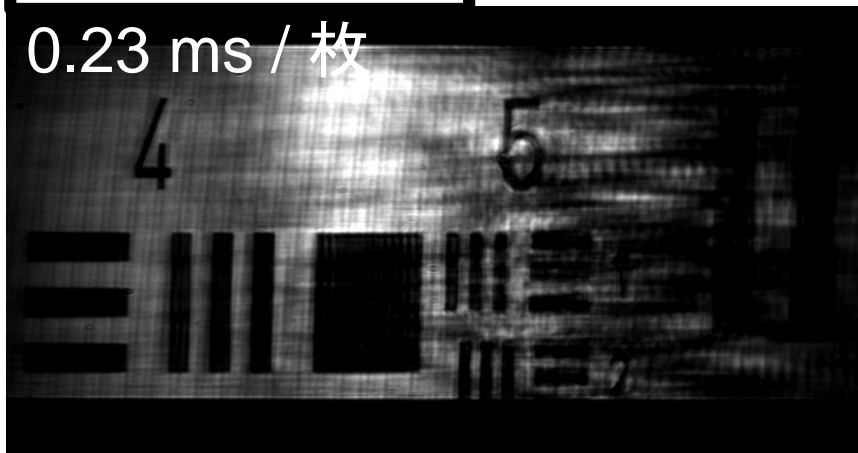
spatial axis (y)



Wavelength axis (x)

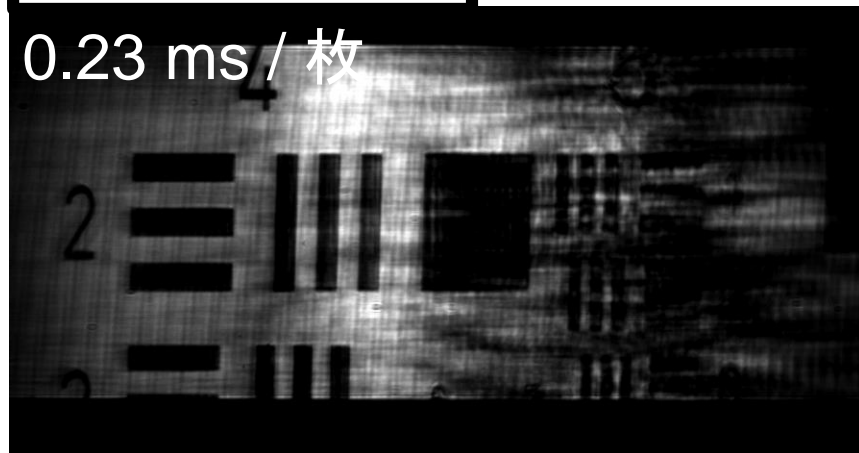
x軸方向に移動

0.23 ms / 枚



y軸方向に移動

0.23 ms / 枚



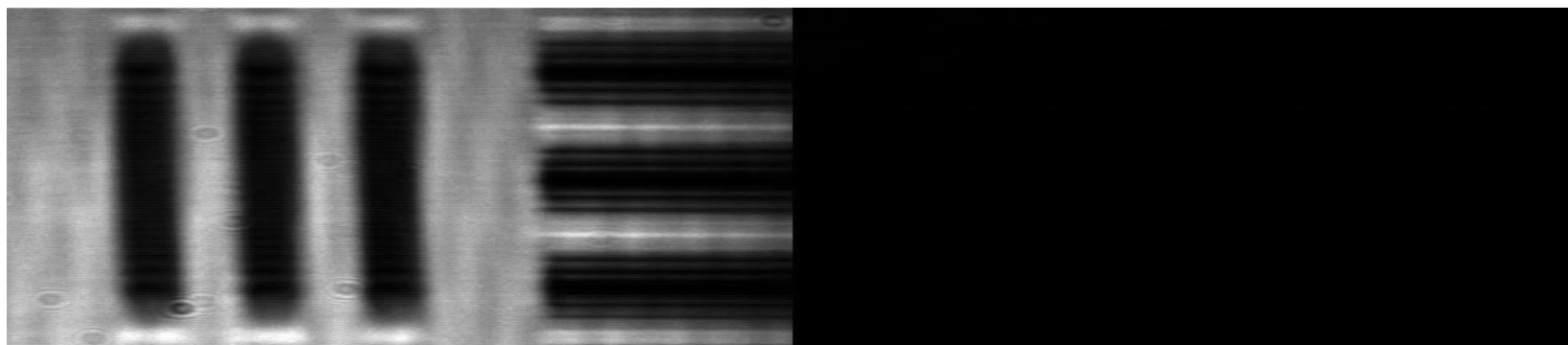


深さ分解イメージング

image size
: 197 μm *419 μm

slit : open

slit : 42.3 μm

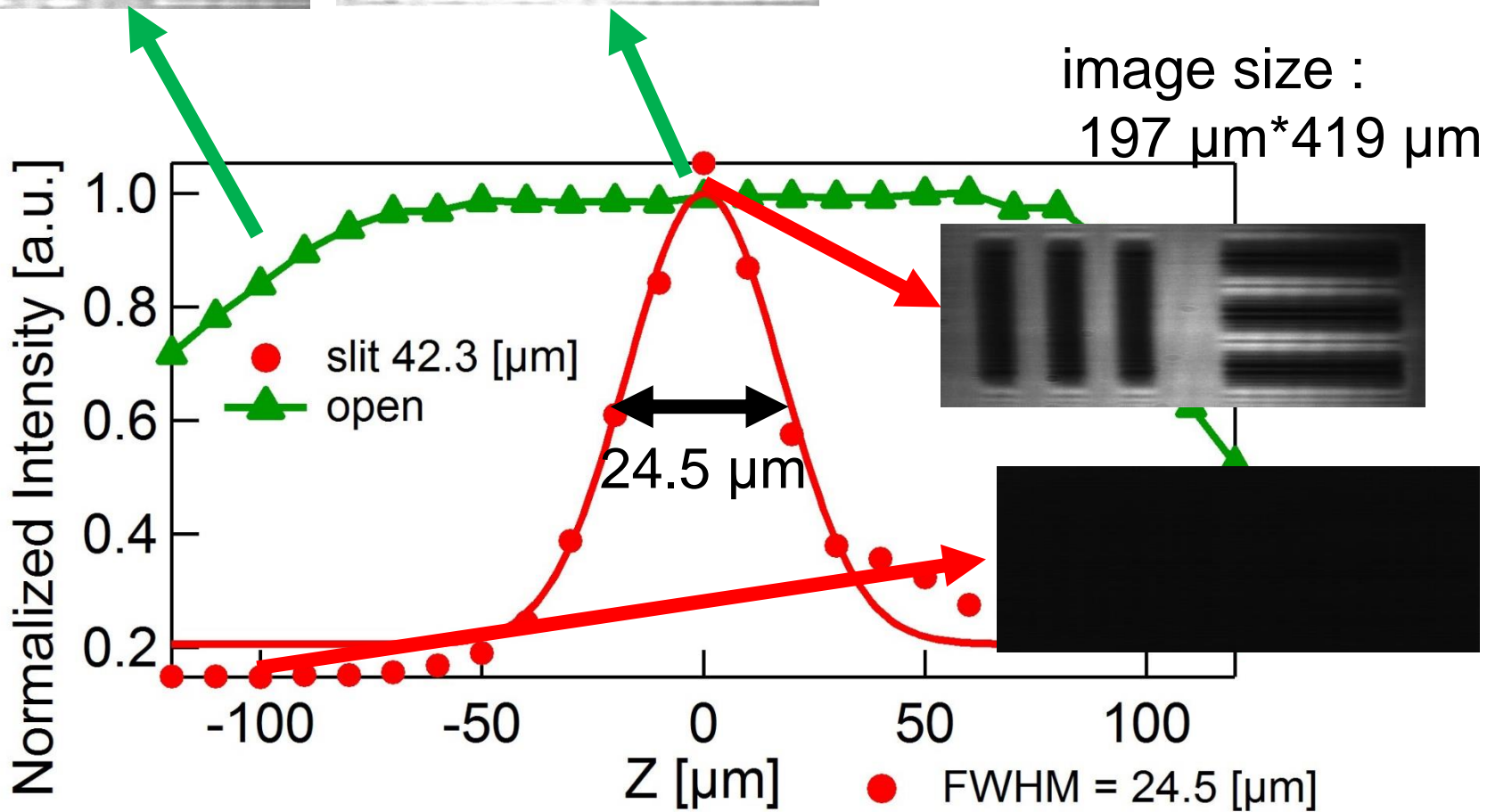
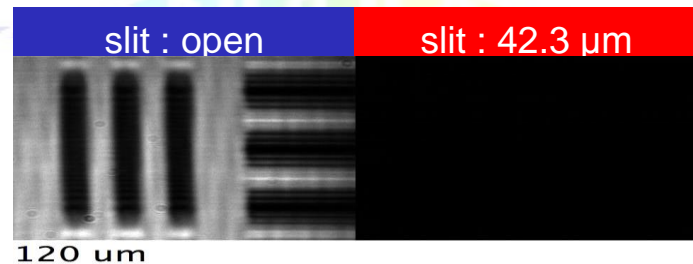


120 μm

サンプルを $z = -120 \mu\text{m} \sim +120 \mu\text{m}$ まで10 μm 刻みに移動

ワンショット・フルフィールド共焦点光学系
における共焦点効果を確認

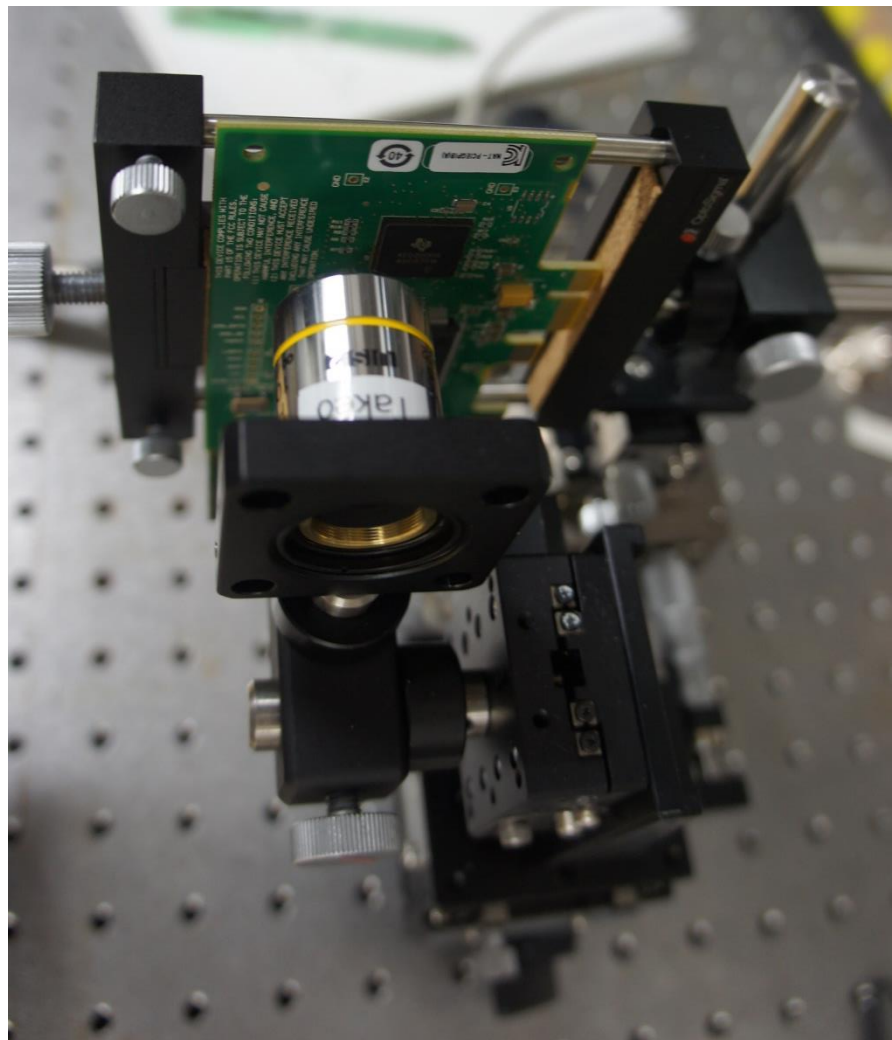
共焦点効果の確認



深さ分解能の理論値 (21.7 μm) にほぼ一致

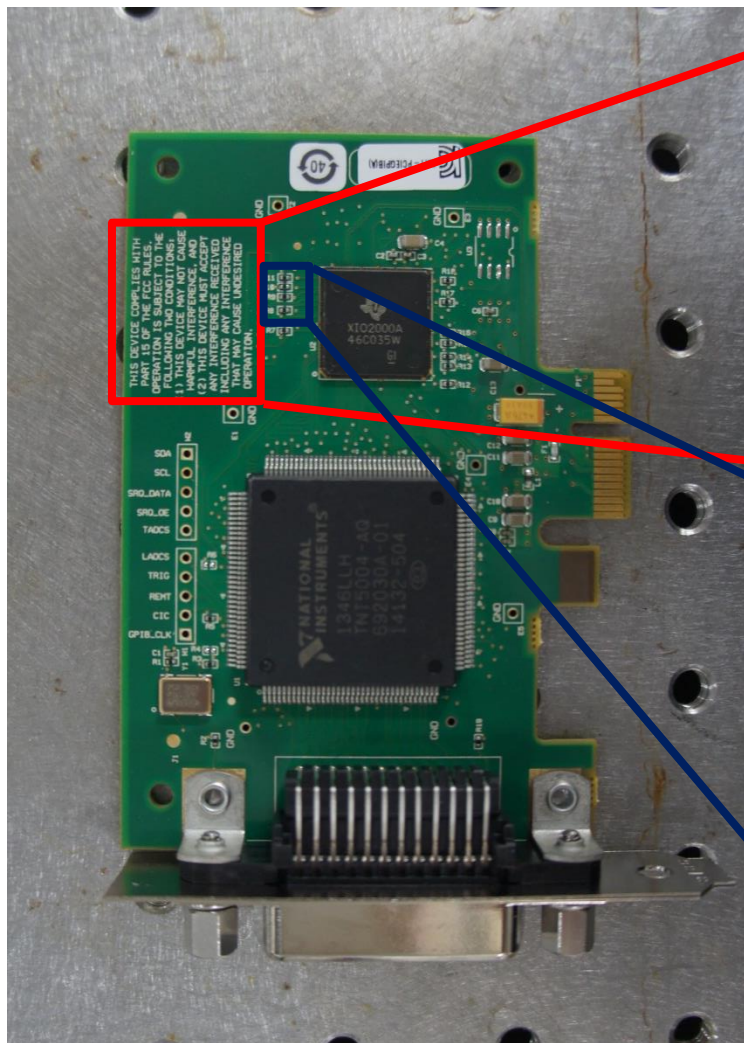
工業計測（表面検査）への応用

サンプル（NI GP-IB ボード）



工業計測（表面検査）への応用

サンプル（NI GP-IB ボード）

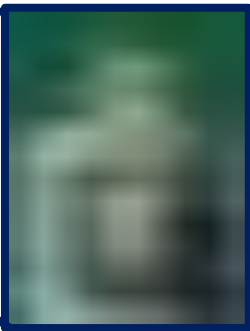


THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. THIS DEVICE IS SUBJECT TO THE FOLLOWING CONDITIONS: (1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE, AND (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED INCLUDING ANY INTERFERENCE THAT MAY CAUSE UNDESIRABLE OPERATION.

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. THIS DEVICE IS SUBJECT TO THE FOLLOWING TWO CONDITIONS: (1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE, AND (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED INCLUDING ANY INTERFERENCE THAT MAY CAUSE UNDESIRABLE OPERATION.



NATIONAL INSTRUMENTS
1345LLH
1345LLH
1345LLH

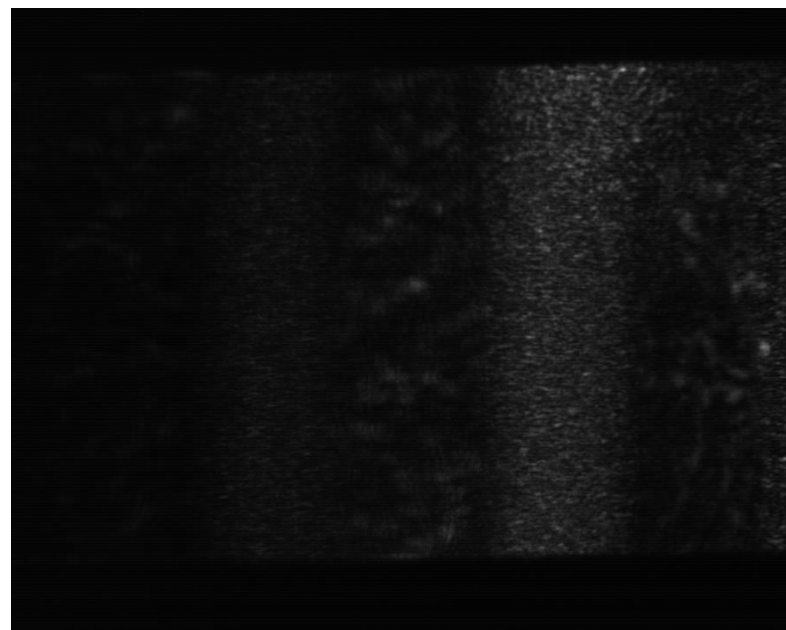
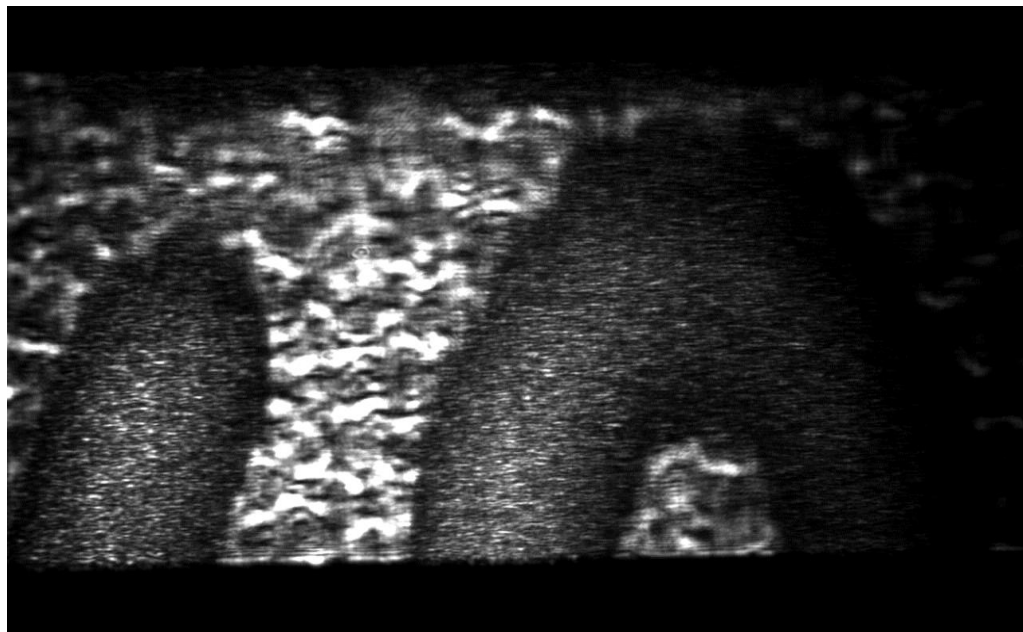


表面検査結果



image size :0.35 mm*1.18 mm

25 fps

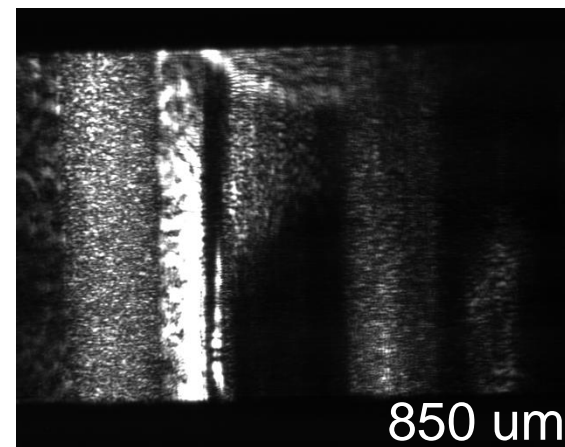
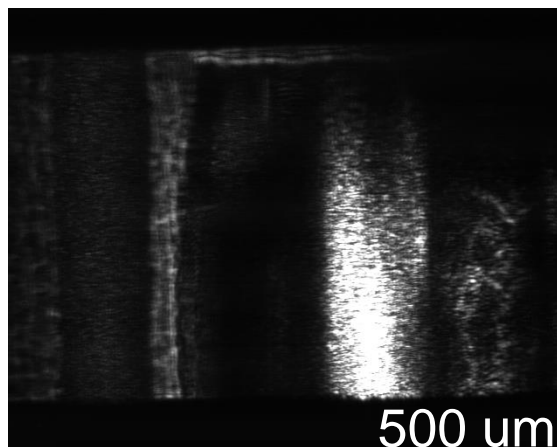
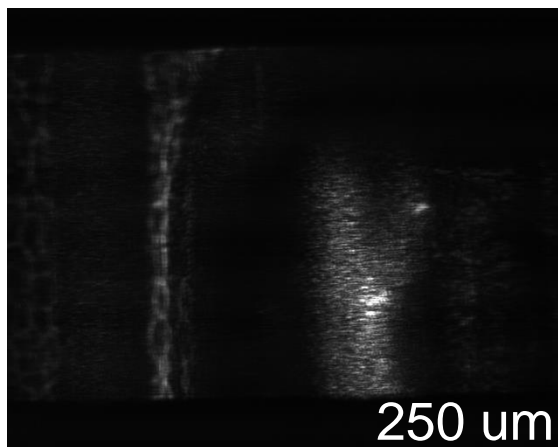
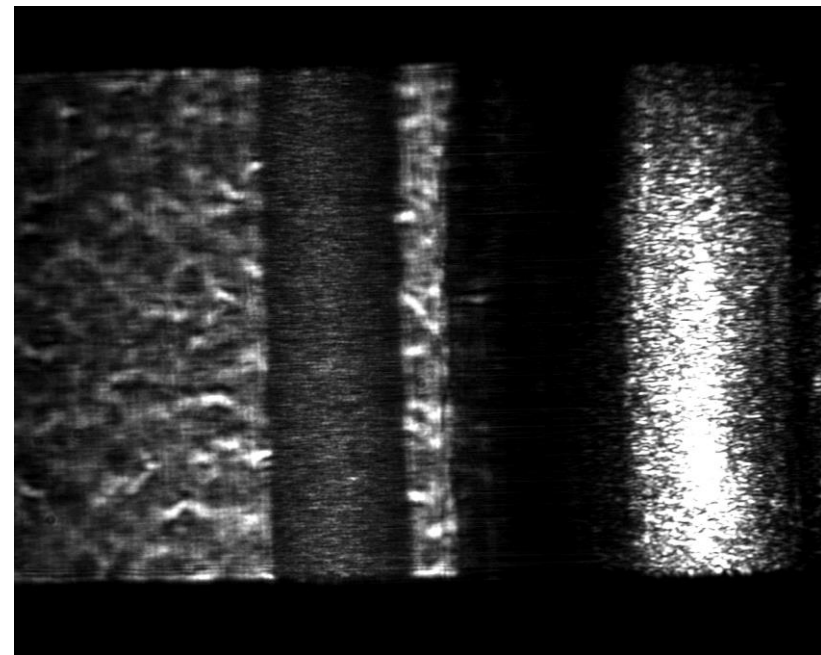
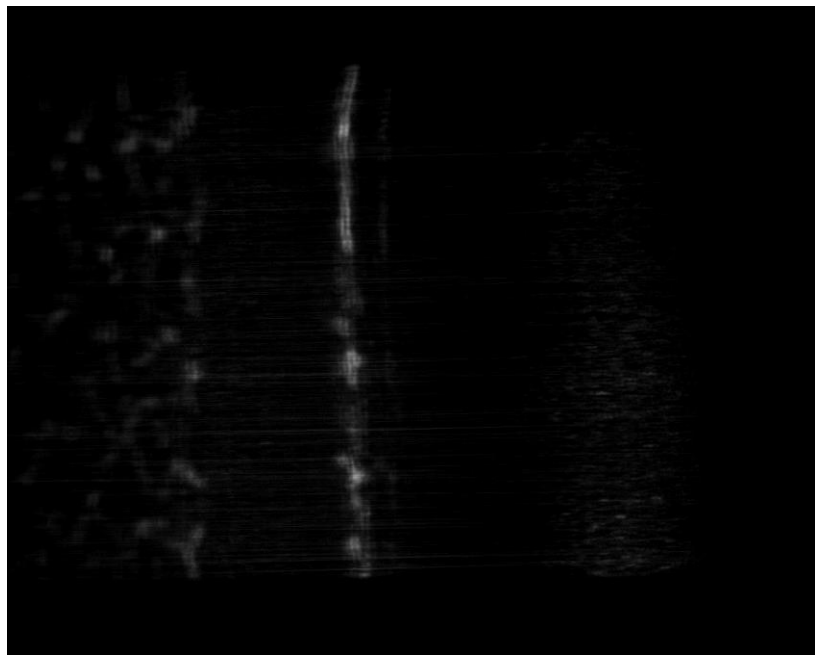


500 um

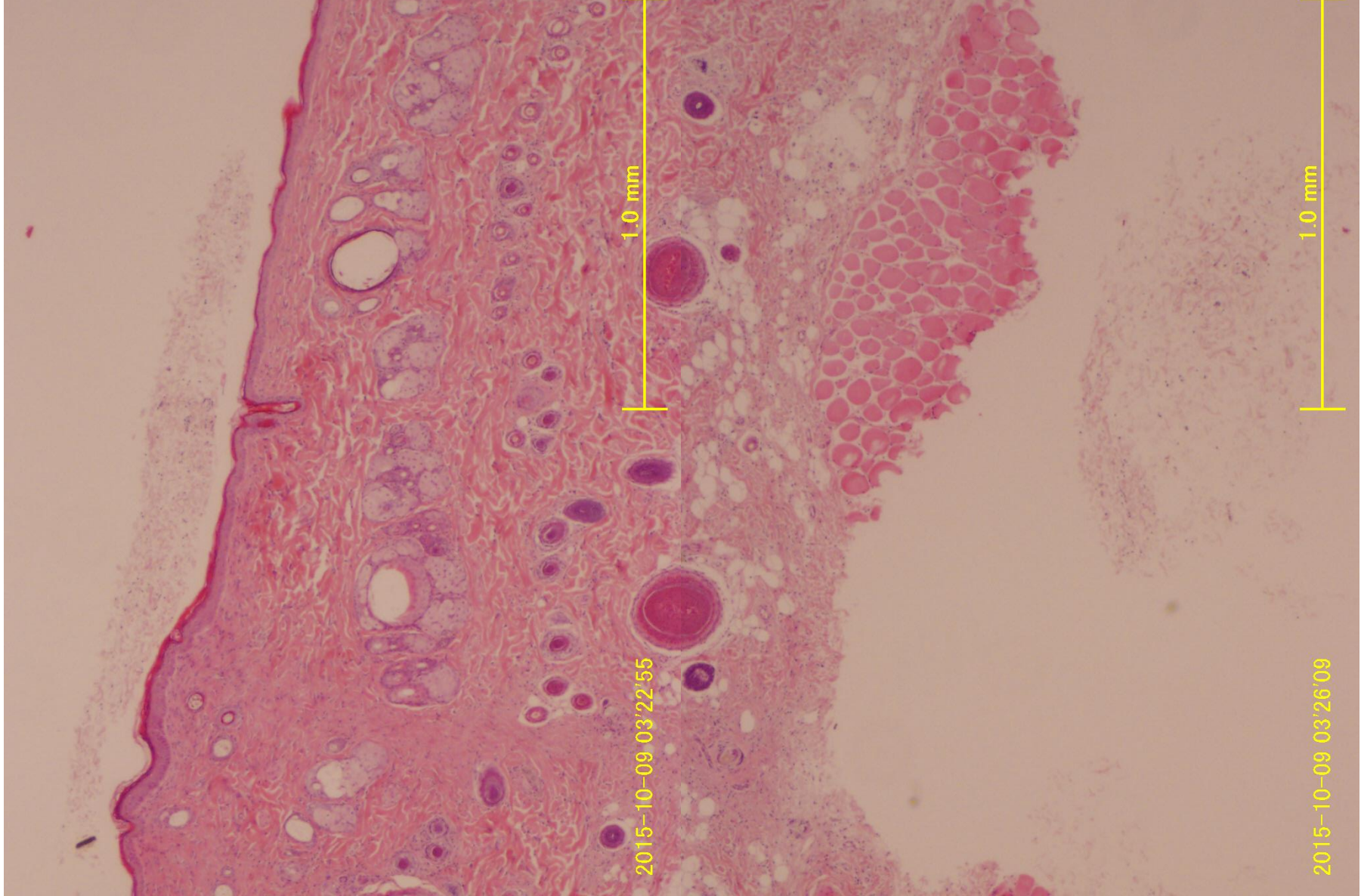
表面検査結果

25 fps

image size :0.35 mm*1.18 mm

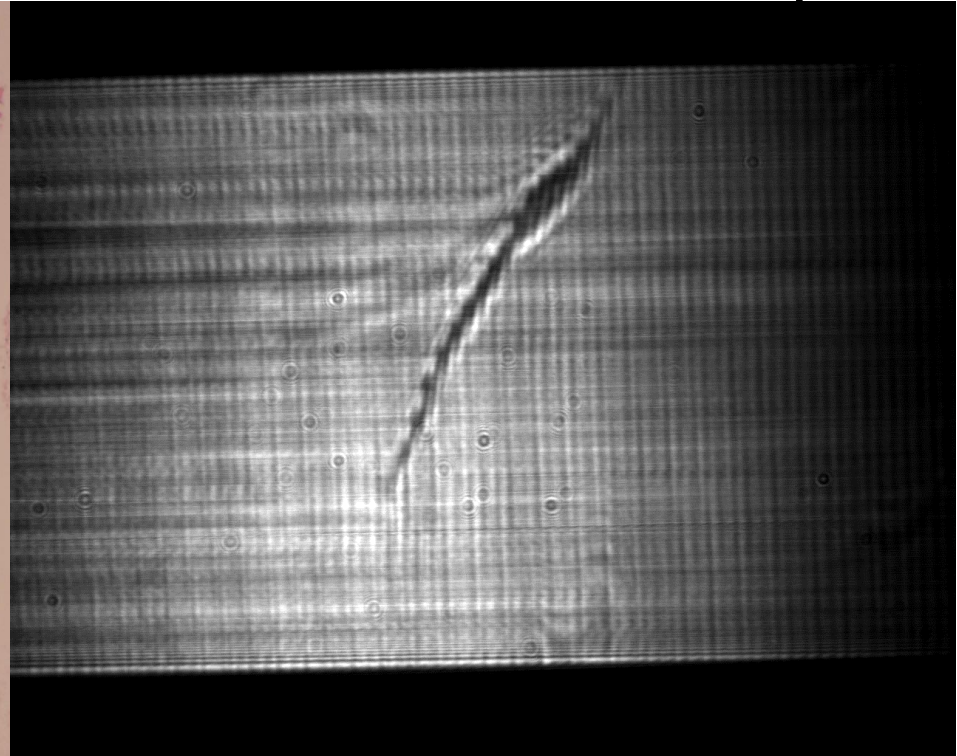
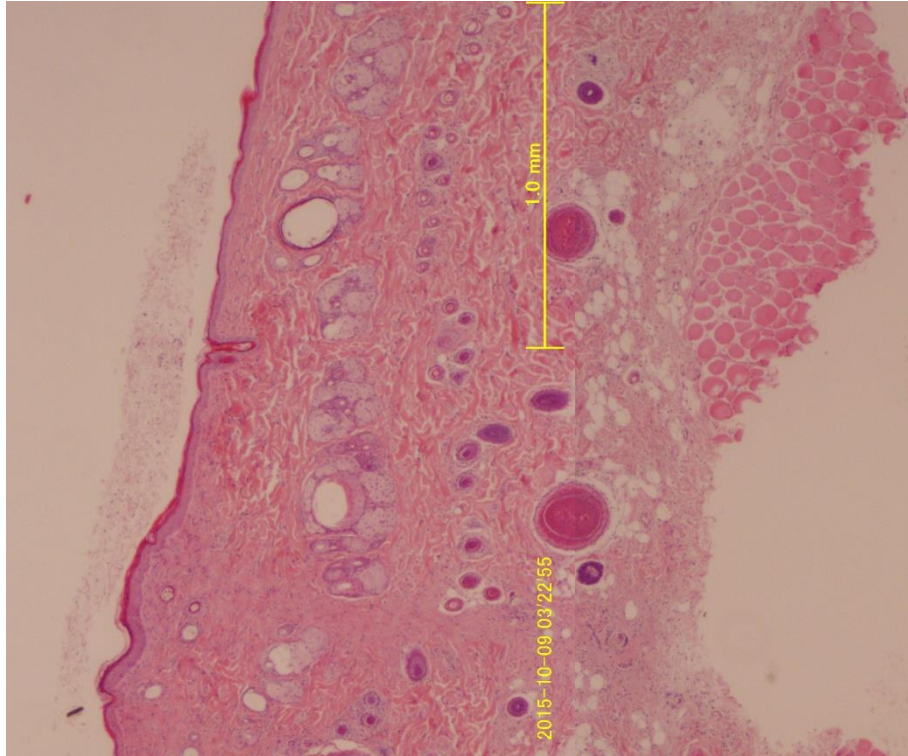


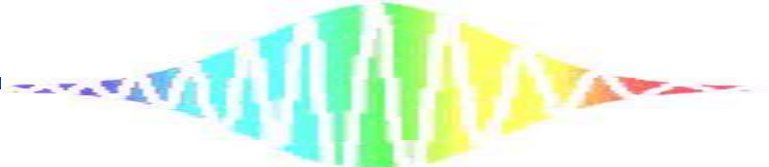
生体イメージングへの応用



生体イメージングへの応用

image size :0.35 mm*1.18 mm
25 fps





まとめ

- 提案光学系による動画の撮影に成功した。
- 工業応用に成功した。
- バイオサンプルの計測に失敗した。

今後の予定

- バイオサンプルのイメージを取得
- 3Dイメージング@ビデオレート？