

Exfoliated MoS₂ flakes: on epi-graphene

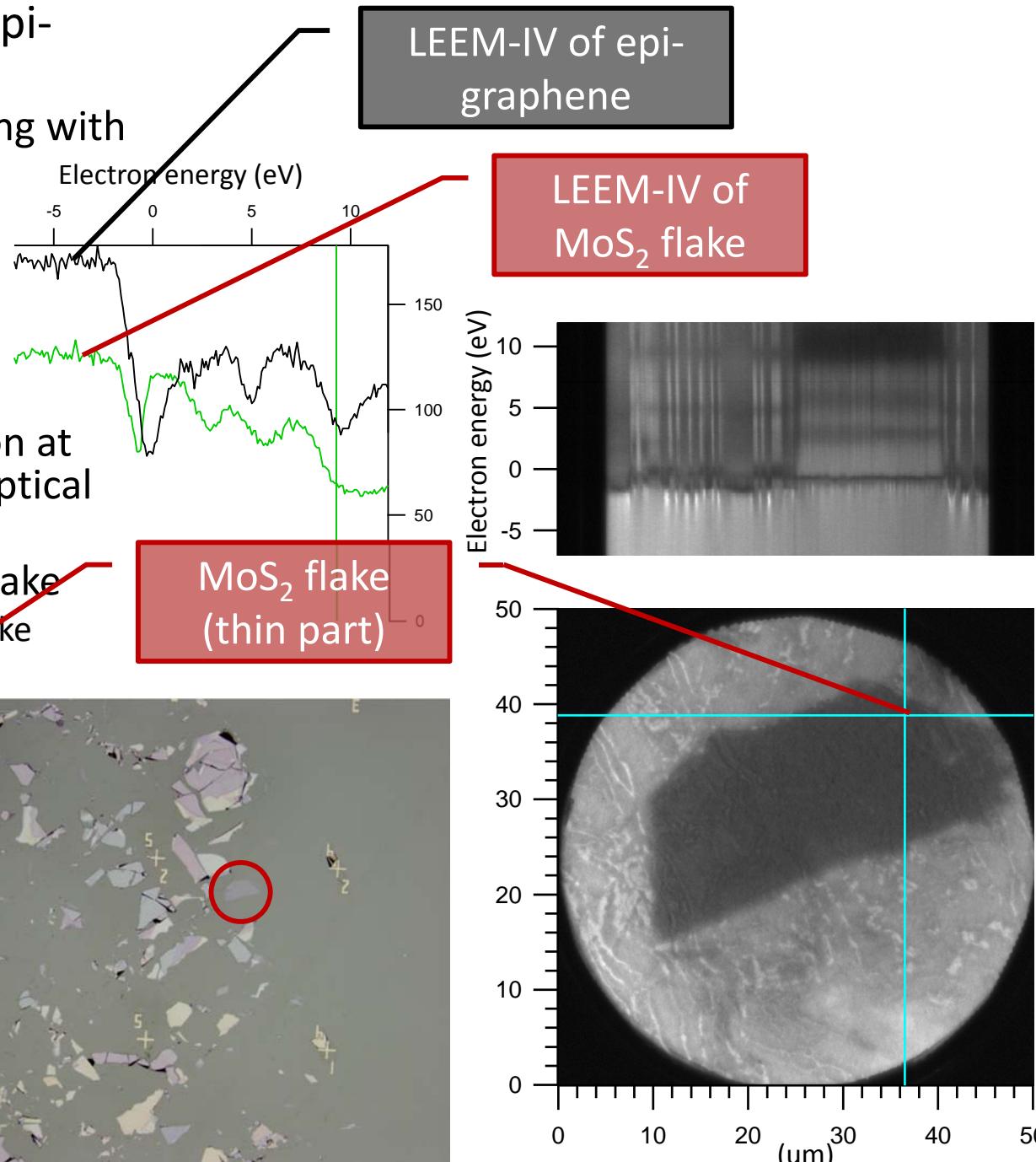
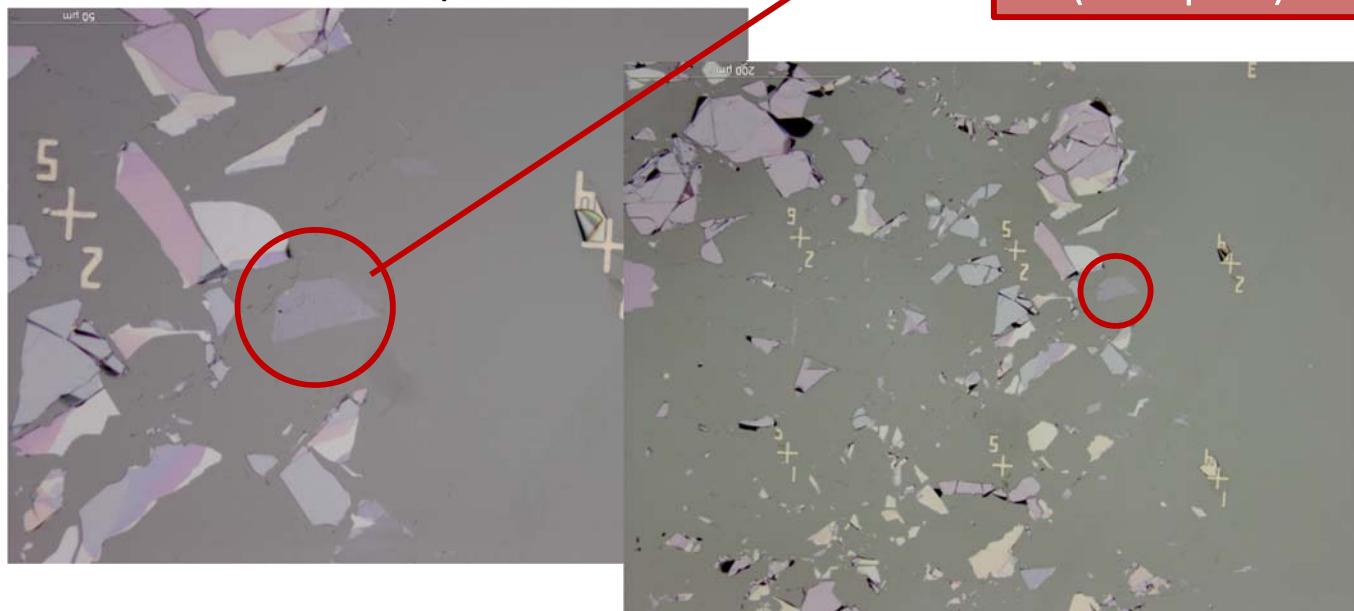
SAND2013-3631P

- MoS₂ flake exfoliated on 1ML epi-graphene (1GL/H/SiC(0001))

- Epi-graphene weakly interacting with a substrate (H-intercalation)
 - Sample NS120118_17
 - Annealed in UHV at ~150C
 - Data: m130417_09 LEEMiv

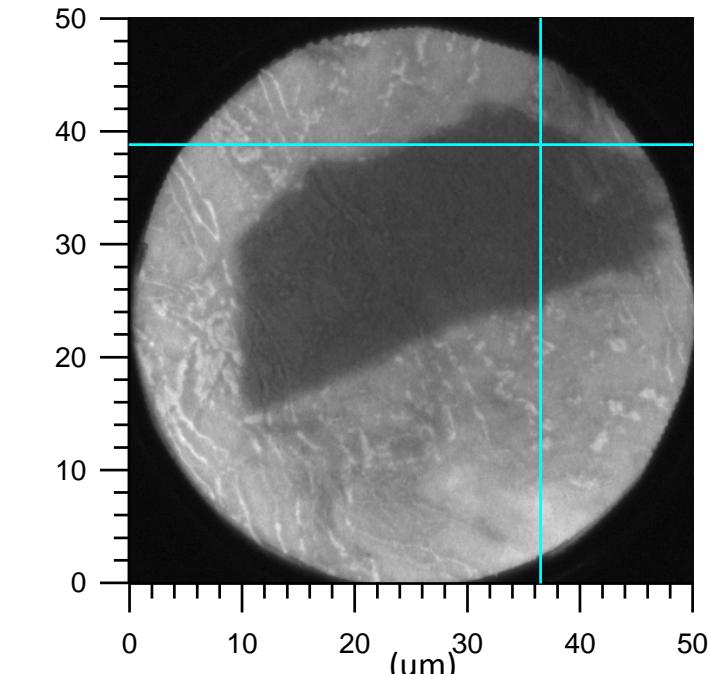
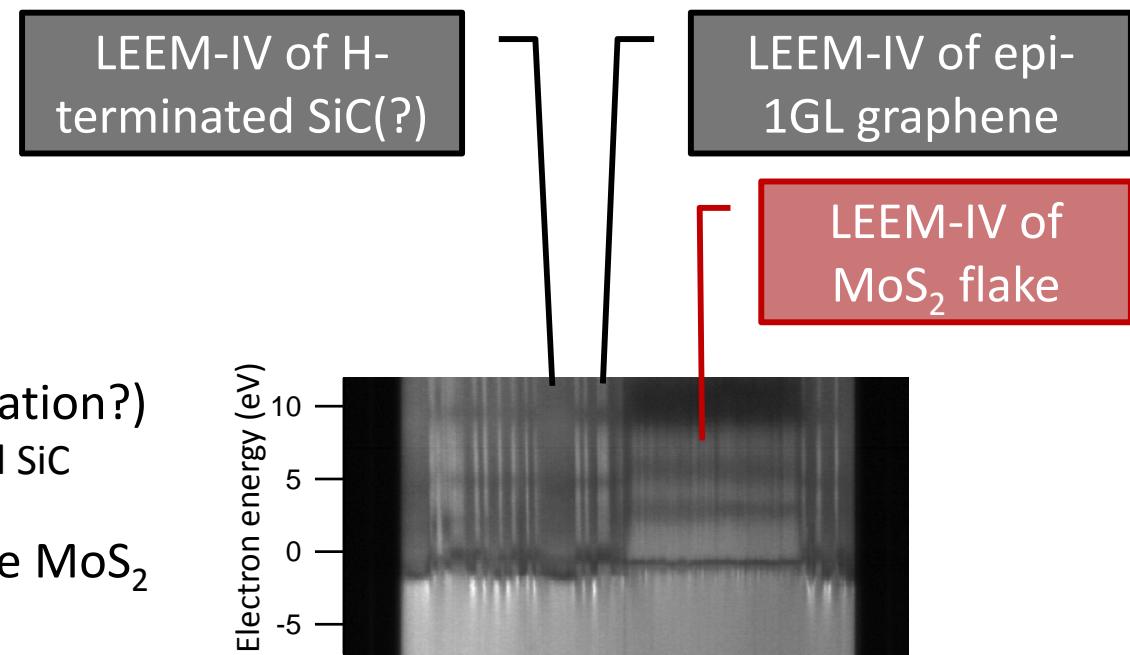
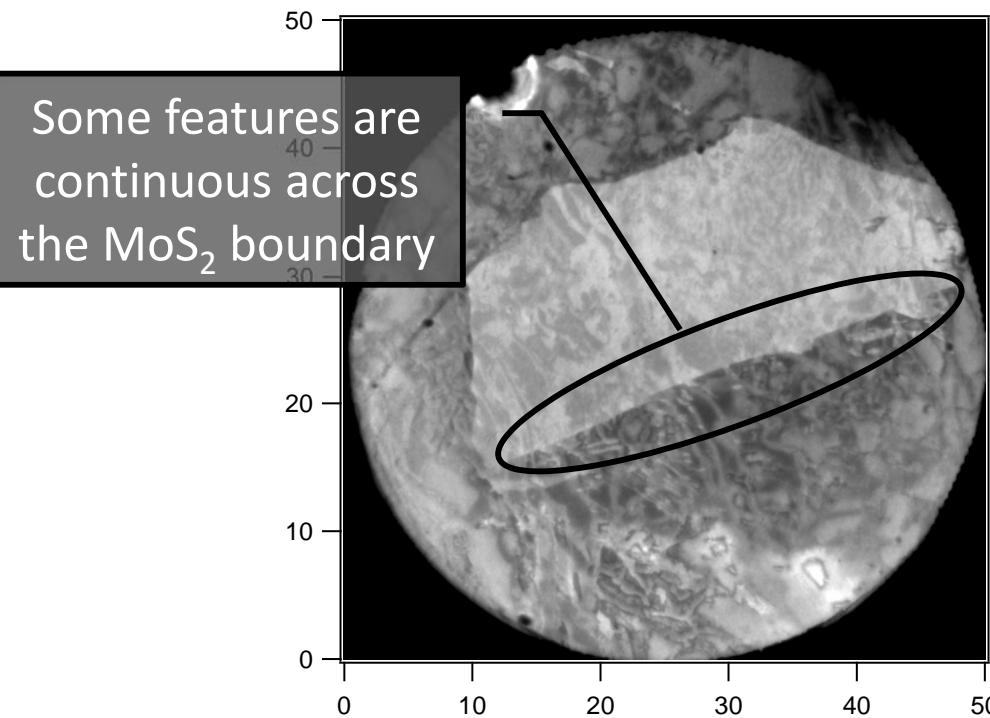
- Main points:

- Demonstrate LEEM observation at the location identified using optical microscope
 - LEEM-iv measured for a thin flake
 - Practically same to a thicker flake



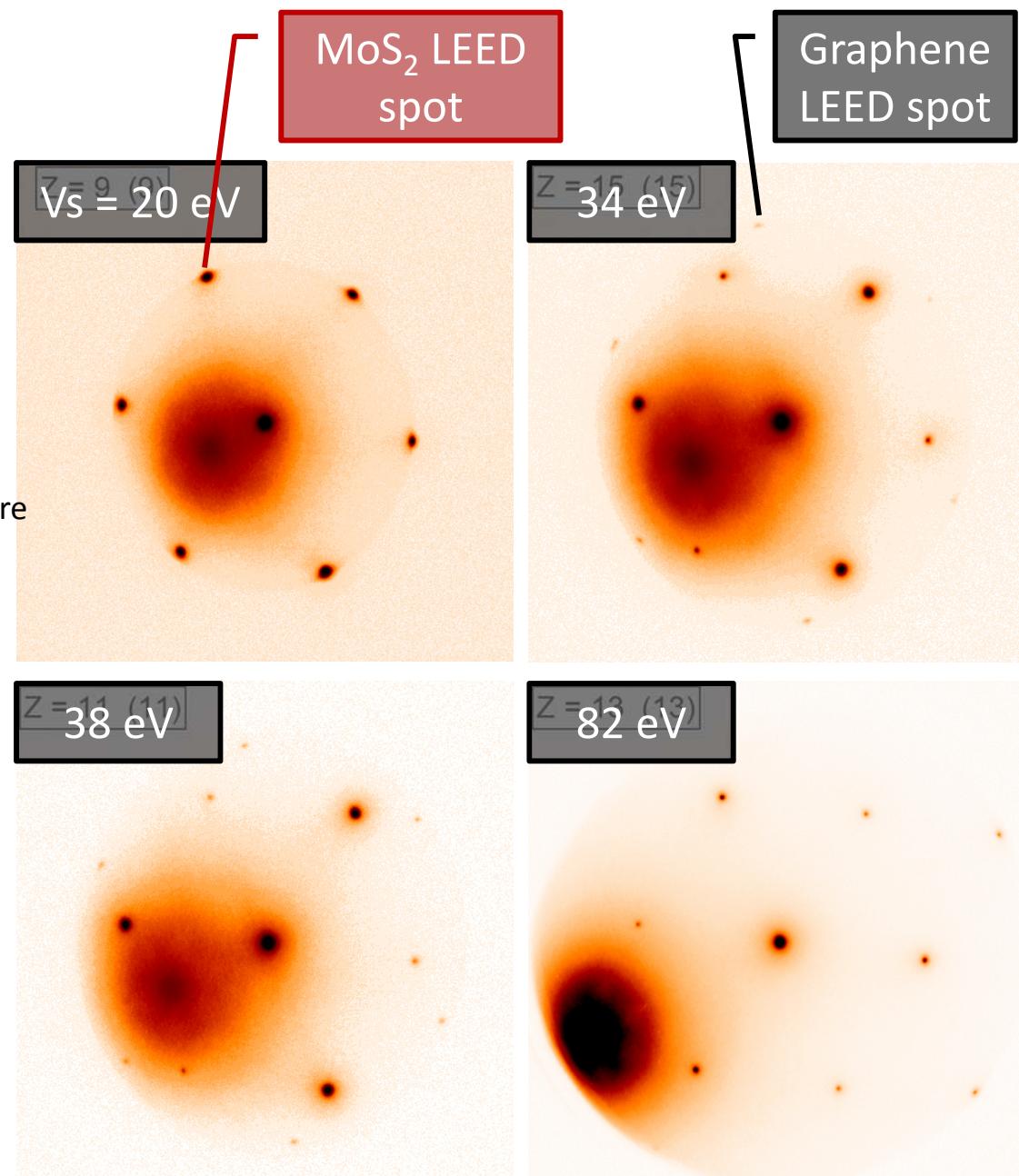
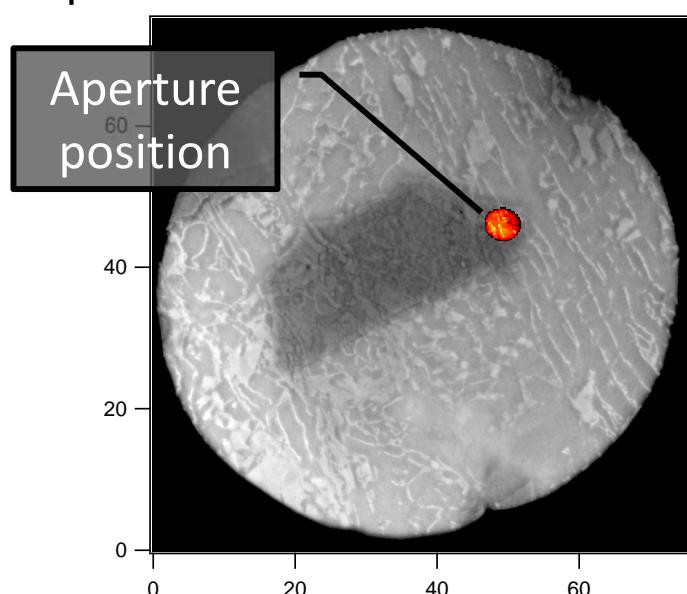
Electron energy contrast of exfoliated MoS₂

- MoS₂ flake on epi-graphene (1GL/H/SiC(0001))
 - Sample NS120118_17, domain 1
 - Data: m130417_09 LEEMiv
- Main points:
 - Graphene beat up (by MoS₂ exfoliation?)
 - Graphene domain and H-terminated SiC substrate (?) are seen
 - Graphene features see-through the MoS₂ flake



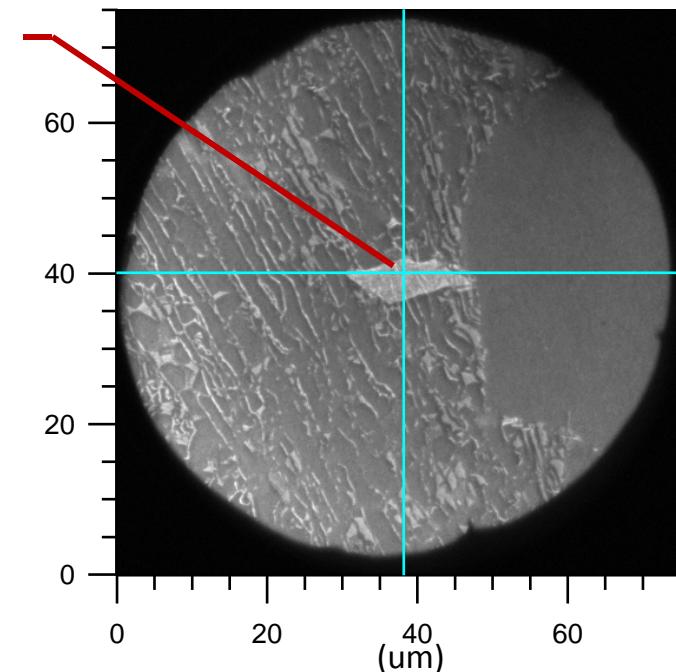
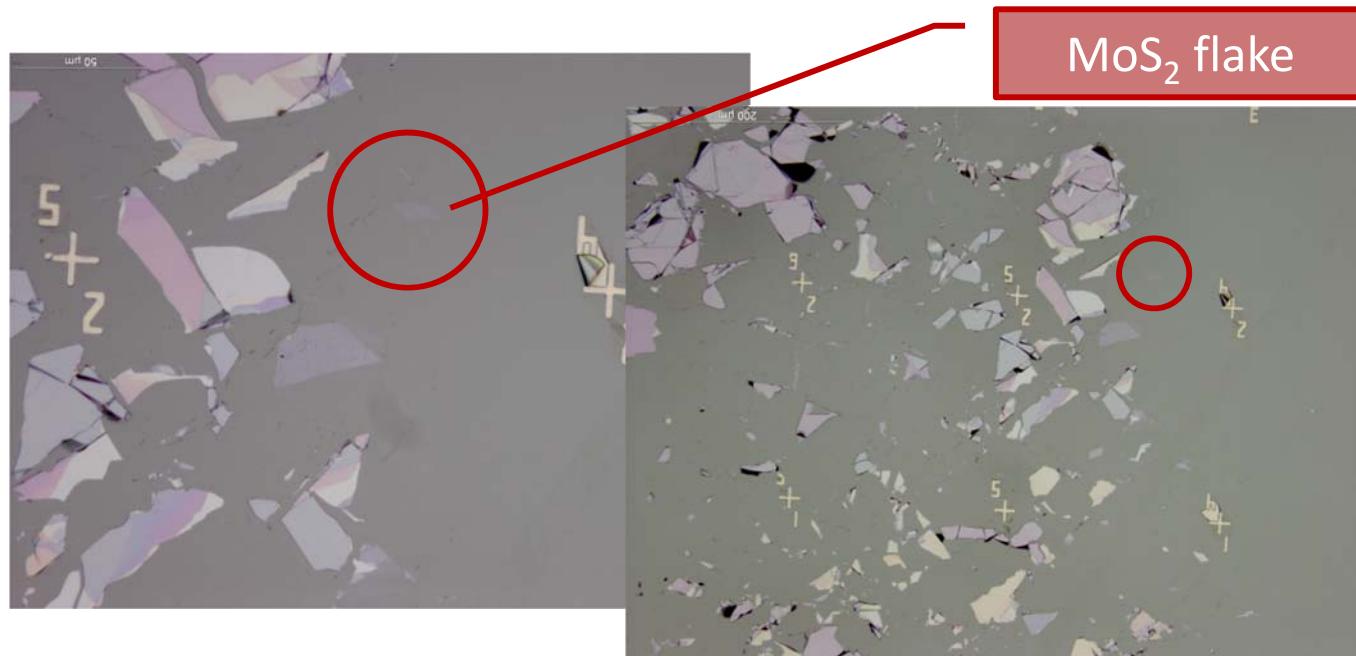
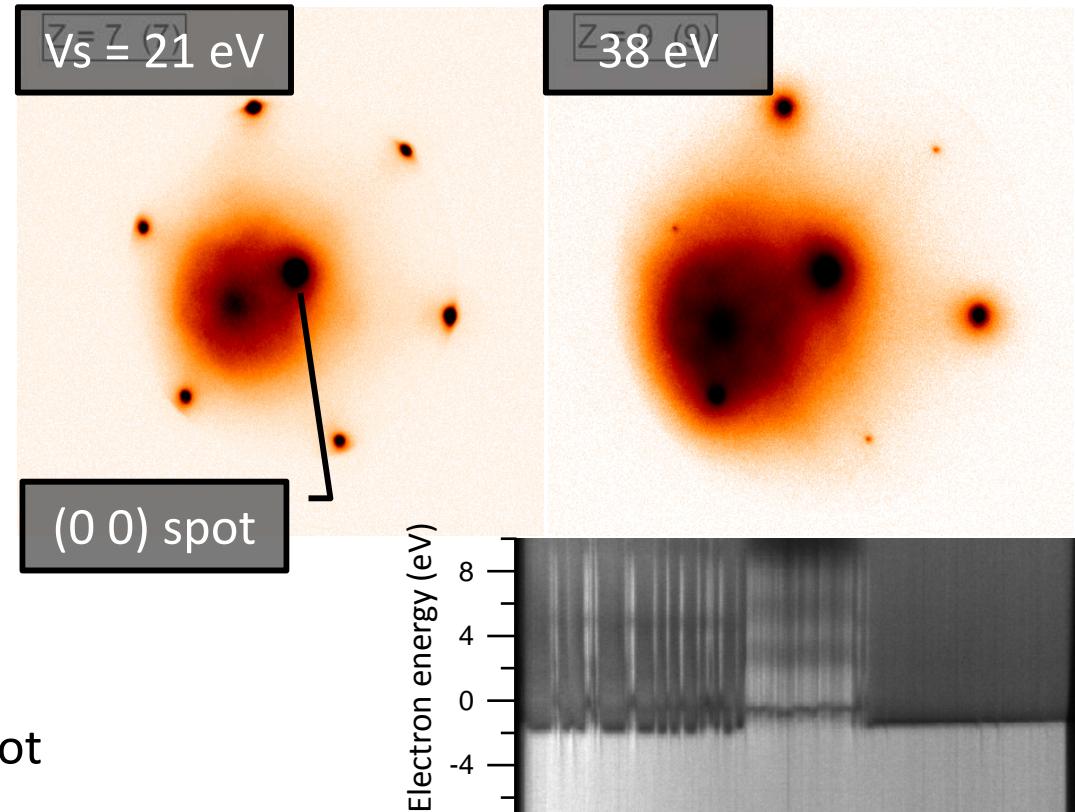
LEED of thin exfoliated MoS₂

- MoS₂ flake on epi-graphene (1GL/H/SiC(0001))
 - Sample NS120118_17, domain 1
 - Data: m130421_01, m130421_02 LEEMiv, m130421_03 LEEMiv
- Main points:
 - LEED pattern of thin MoS₂ flake is sharp
 - Weak graphene LEED spot observed
 - Aperture location might include bare graphene domain
 - No moiré observed for this flake
 - Clear secondary electron emission pattern



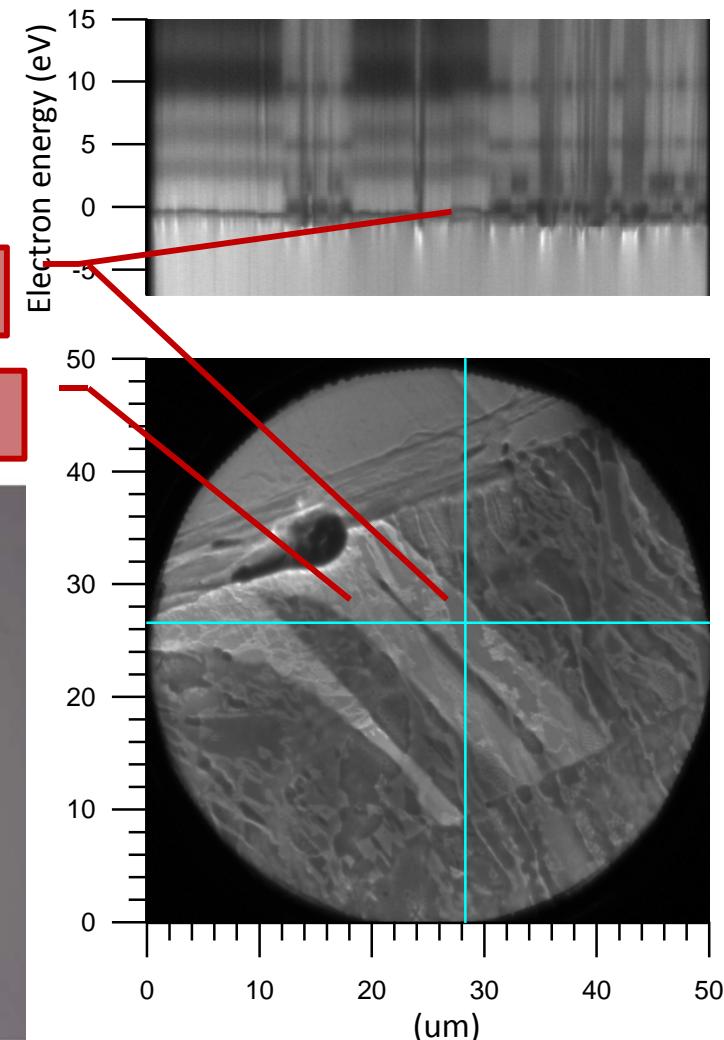
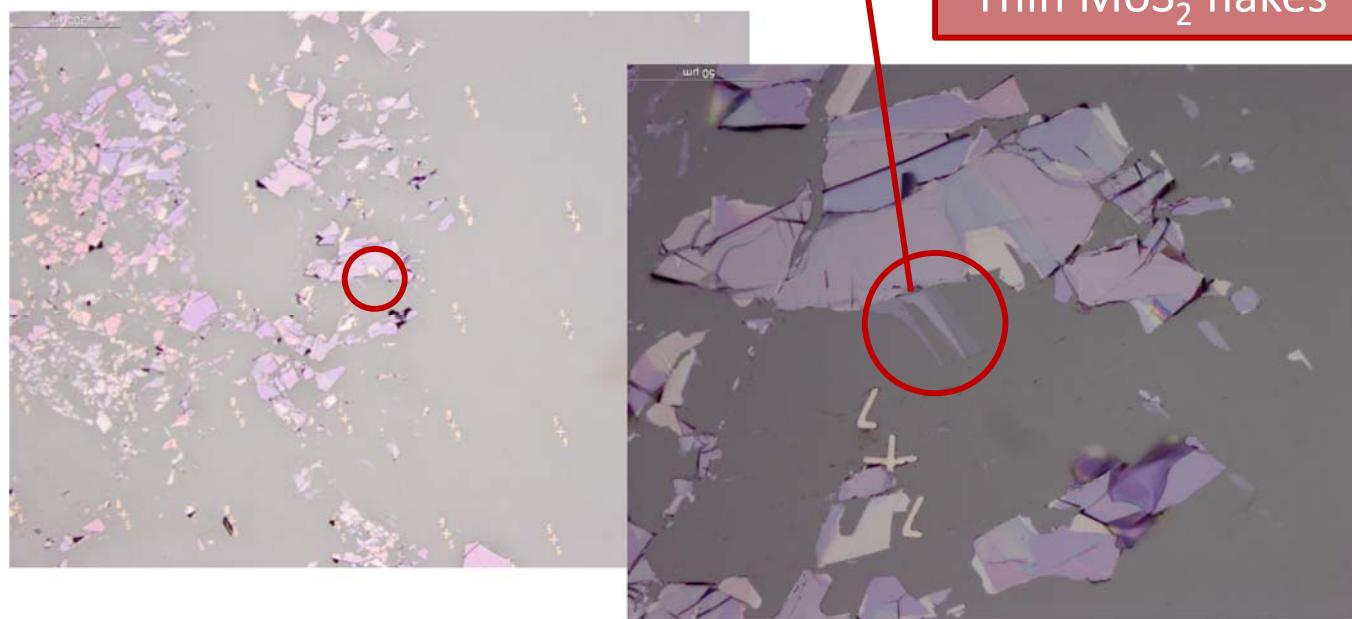
Another exfoliated MoS₂ flake

- MoS₂ flake on epi-graphene (1GL/H/SiC(0001))
 - Sample NS120118_17, domain 2
 - Data: m130421_04, m130421_05 LEEMiv
- Main points:
 - (Maybe) a sign of moiré near (0 0) spot



Contrast variations within a MoS_2 flake

- MoS_2 flakes on epi-graphene (1GL/H/SiC(0001))
 - Sample NS120118_17, domain 3
 - Data: m130421_09 LEEMiv
- Main points:
 - A contrast variation observed within thin MoS_2 flakes near E_{vac}
 - Area of different contrast seems to continue to graphene exfoliated area (i.e. no graphene)
 - Three thin flakes with differing thickness have almost the same LEEM iv except for near E_{vac}

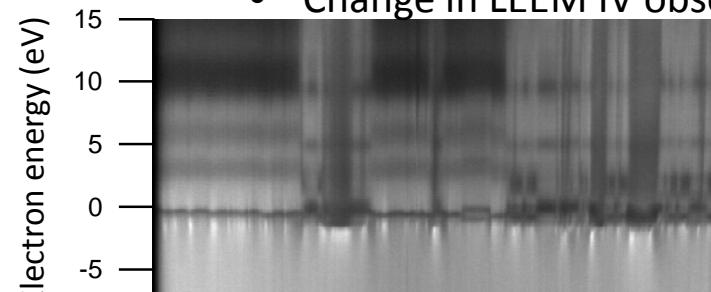


LEEM IV of various areas

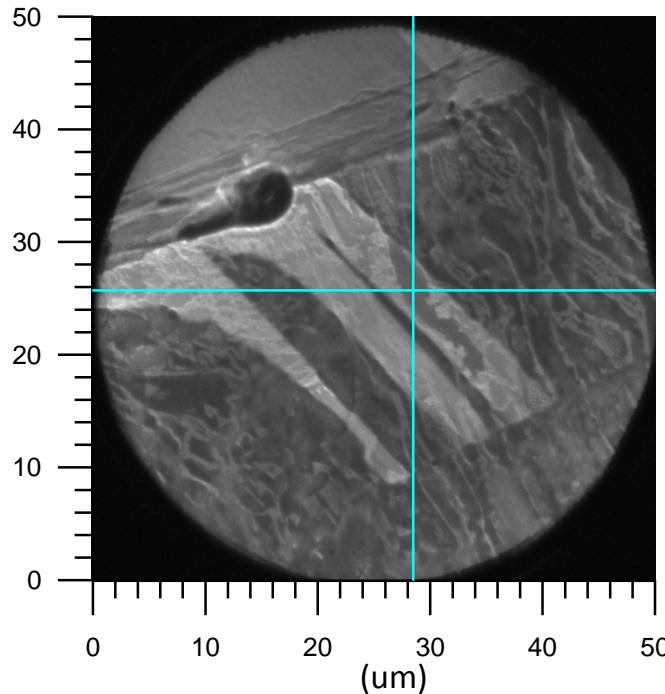
- MoS₂ flakes on epi-graphene (1GL/H/SiC(0001))
 - Sample NS120118_17, domain 3
 - Data: m130421_09 LEEMiv

- Main points:

- Same to previous slide
 - Change in LEEM IV observed near E_{vac}

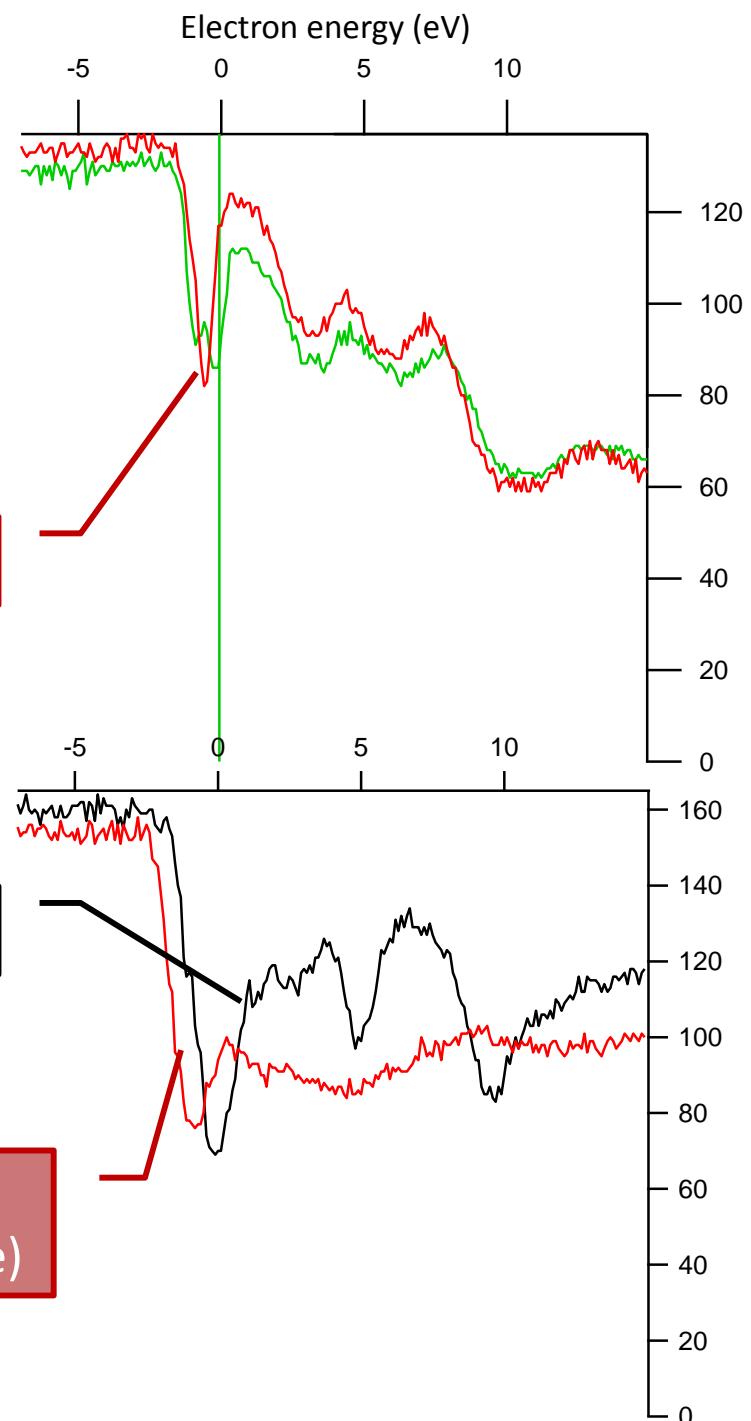


Normal MoS₂ flakes



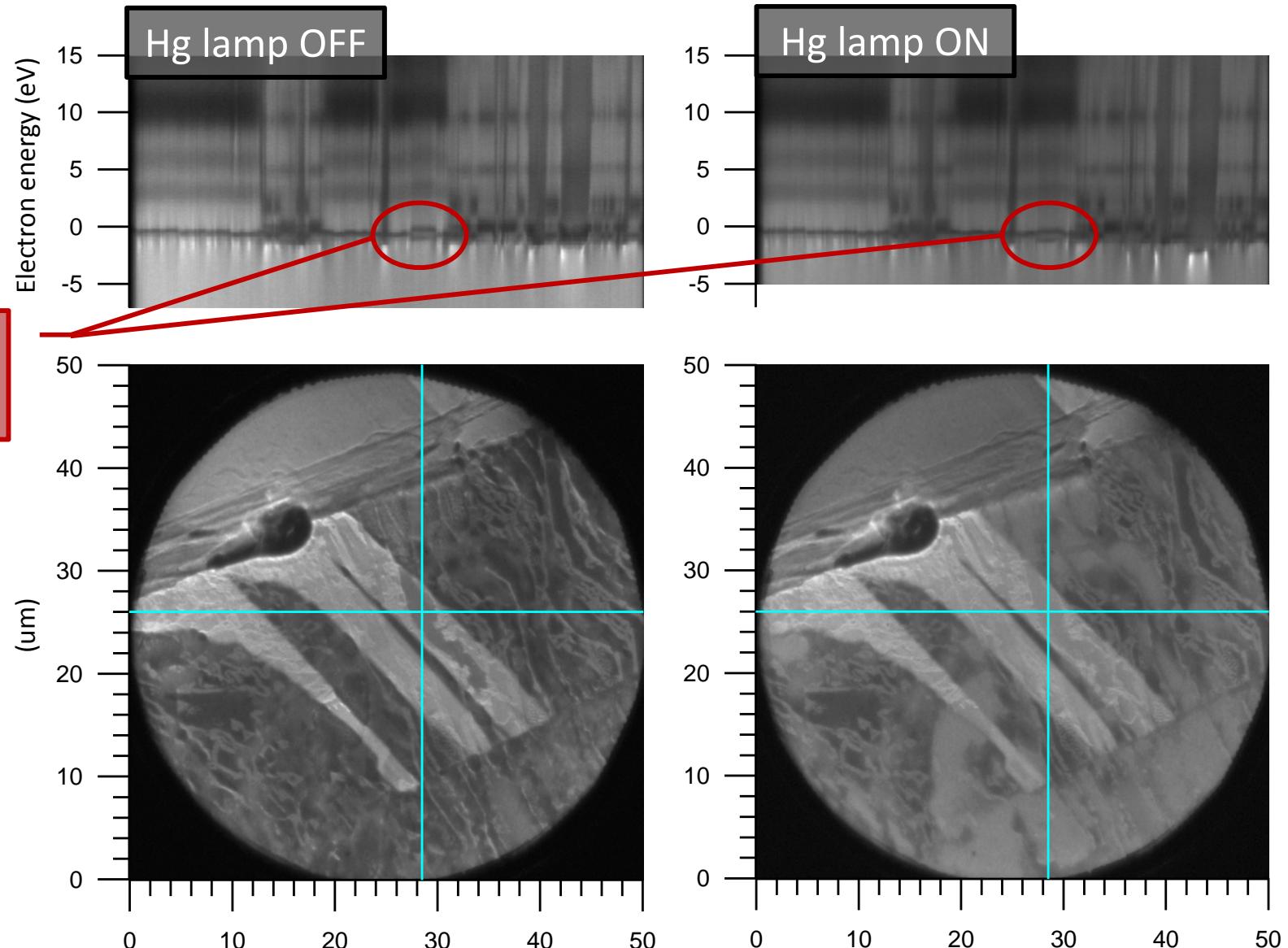
1GL

graphene exfoliated
area (i.e. no graphene)



UV light changes LEEM contrast

- MoS₂ flakes on epi-graphene (1GL/H/SiC(0001))
 - Sample NS120118_17, domain 3
 - Data: m130421_09 LEEMiv, m130421_10 LEEMiv



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