



# K2-22b

(A Disintegrating Exoplanet)



JWST



## JWST Measurements of Exposed Hot Rock Entrails



CENTER FOR  
Exoplanets & Habitable Worlds

Seeking to discover habitable planets and life beyond the Solar System.



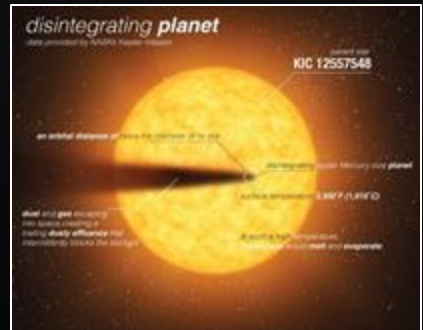
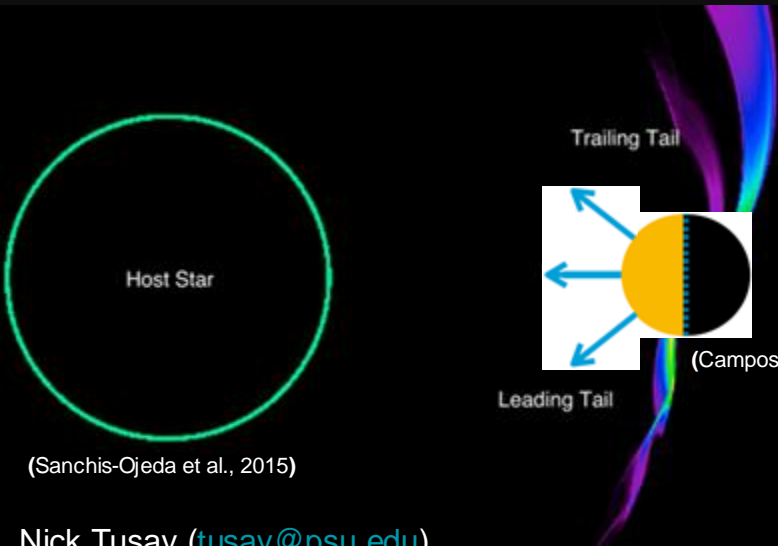
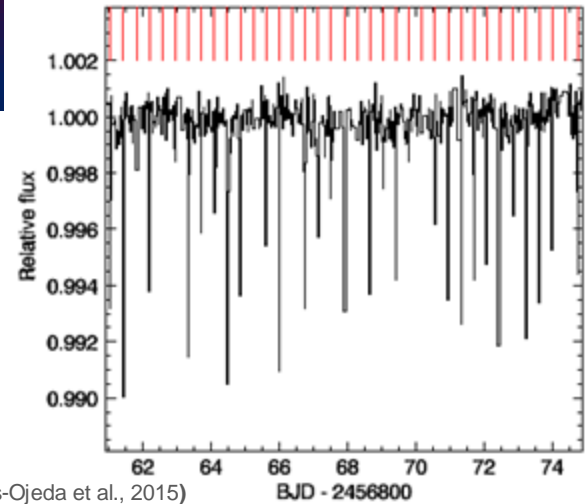
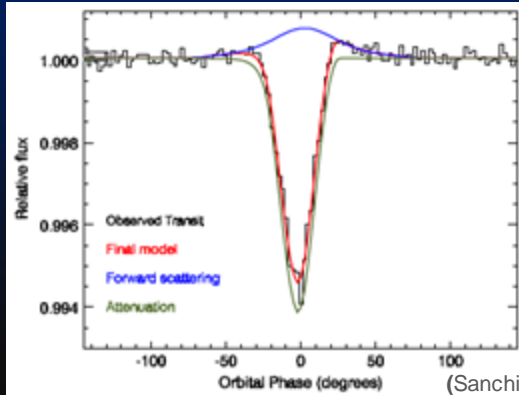
STScI

SPACE TELESCOPE  
SCIENCE INSTITUTE

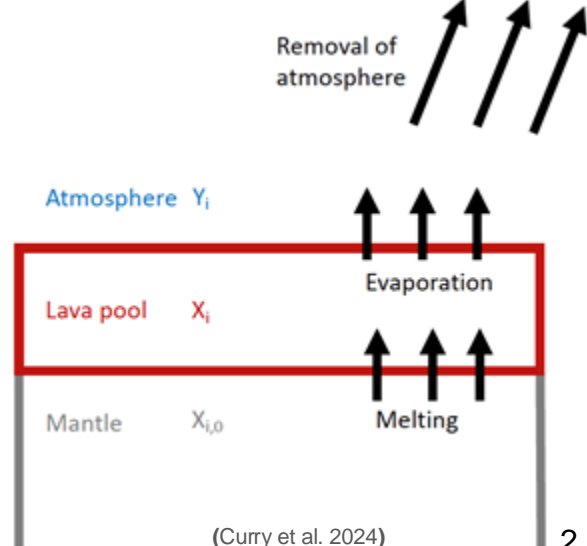


# K2-22b - A Disintegrating Planet Model

- M0 star ~3800 K
- 9hr period orbit
- Surface magma pool
- Interior convection with mantle
- Sublimation of rocky surface
- Cloud of dust grains & tails
- Variable cloud density



(Campos Estrada et al., 2023)

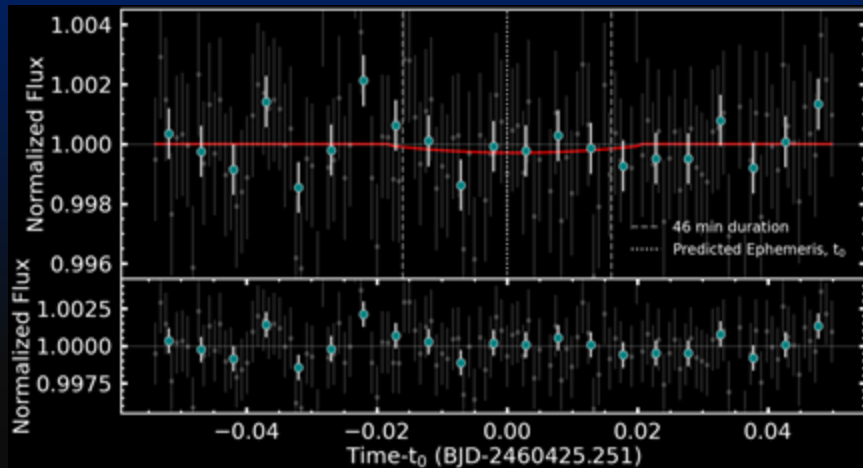


(Curry et al. 2024)

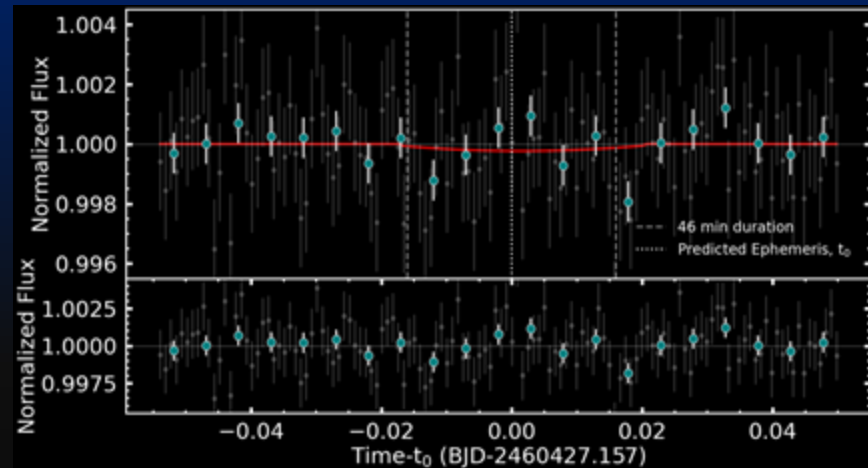
(Sanchis-Ojeda et al., 2015)

# JWST Transit Lightcurve Detection

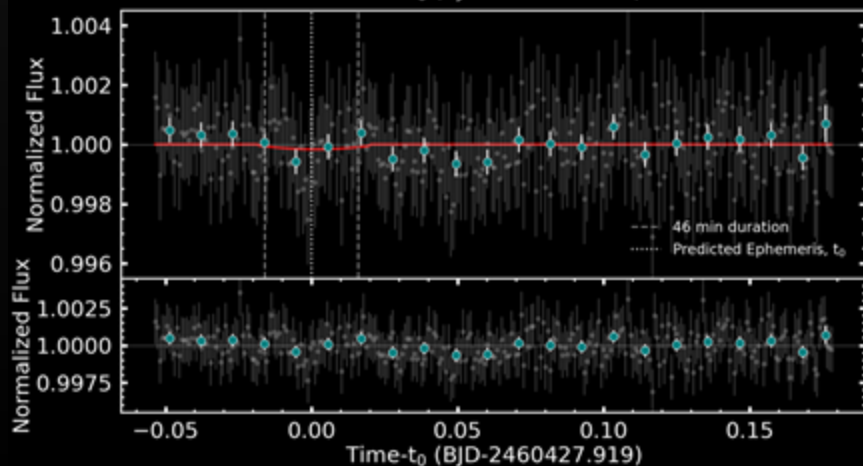
T1



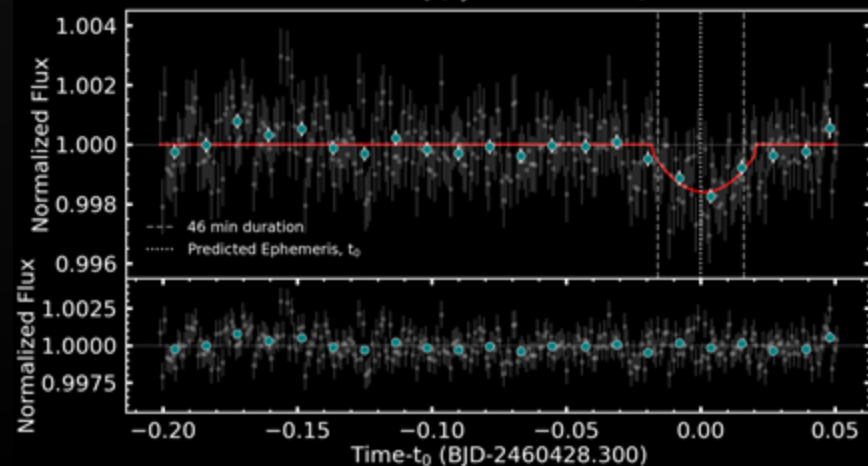
T2



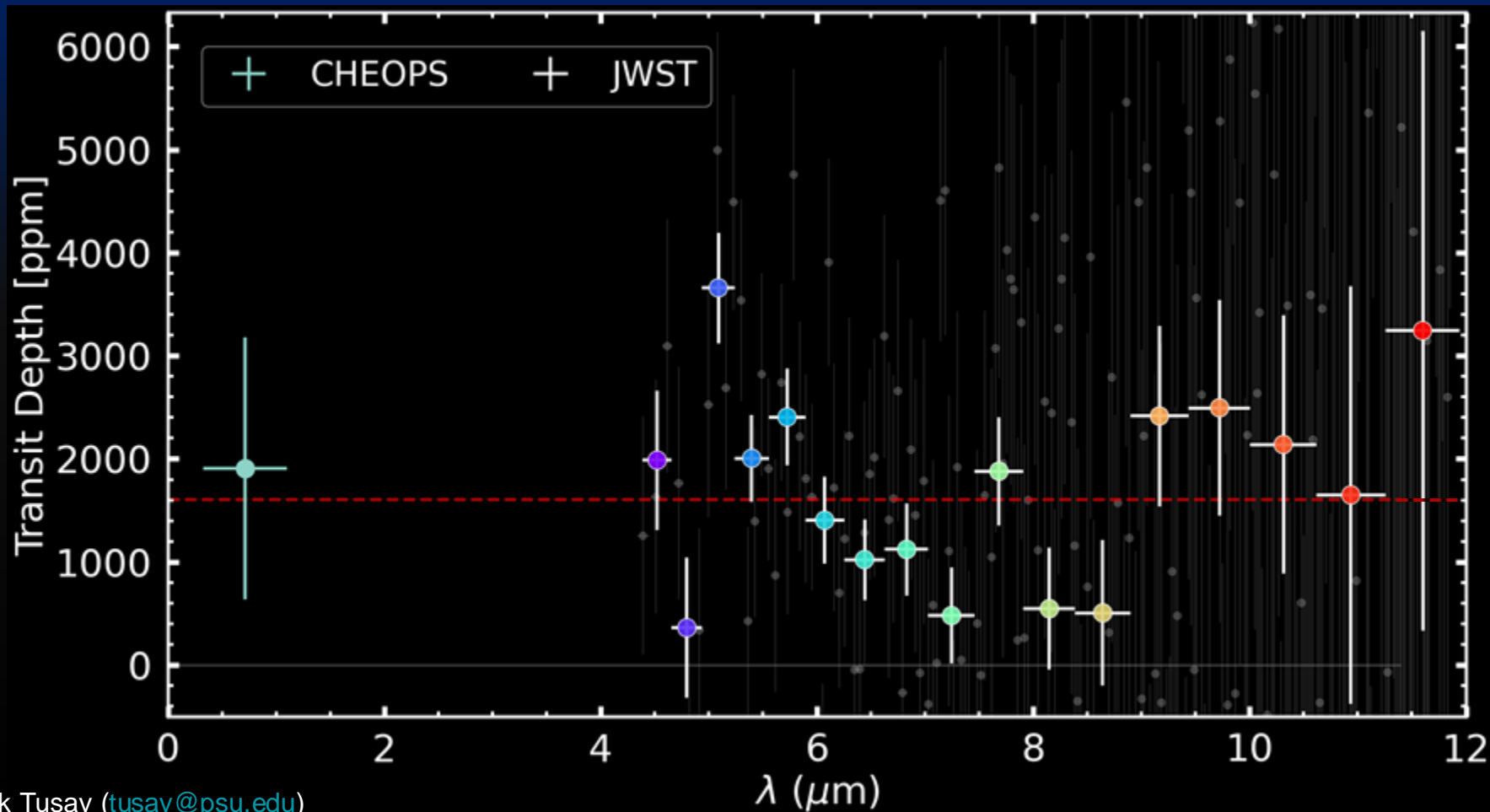
T3



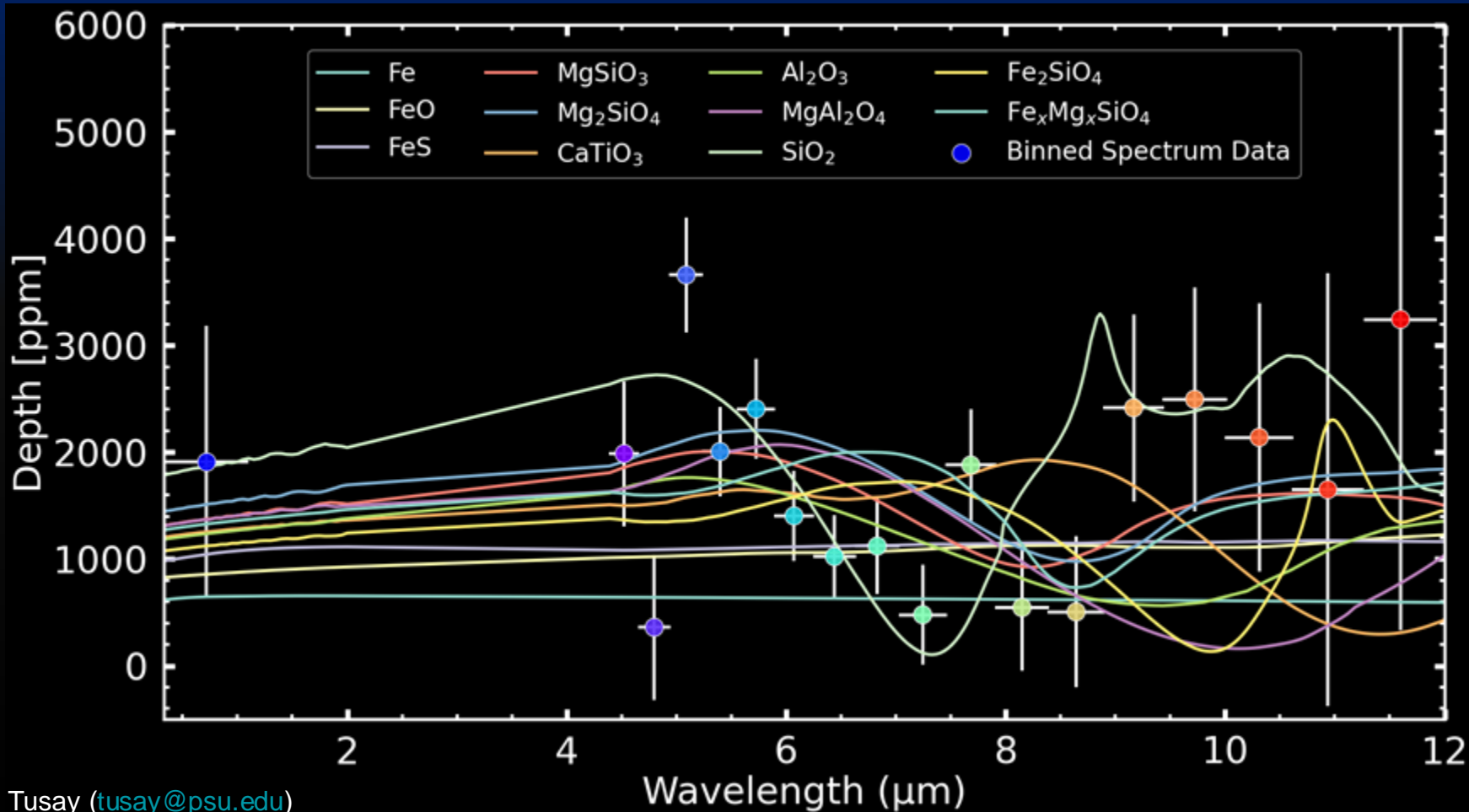
T4



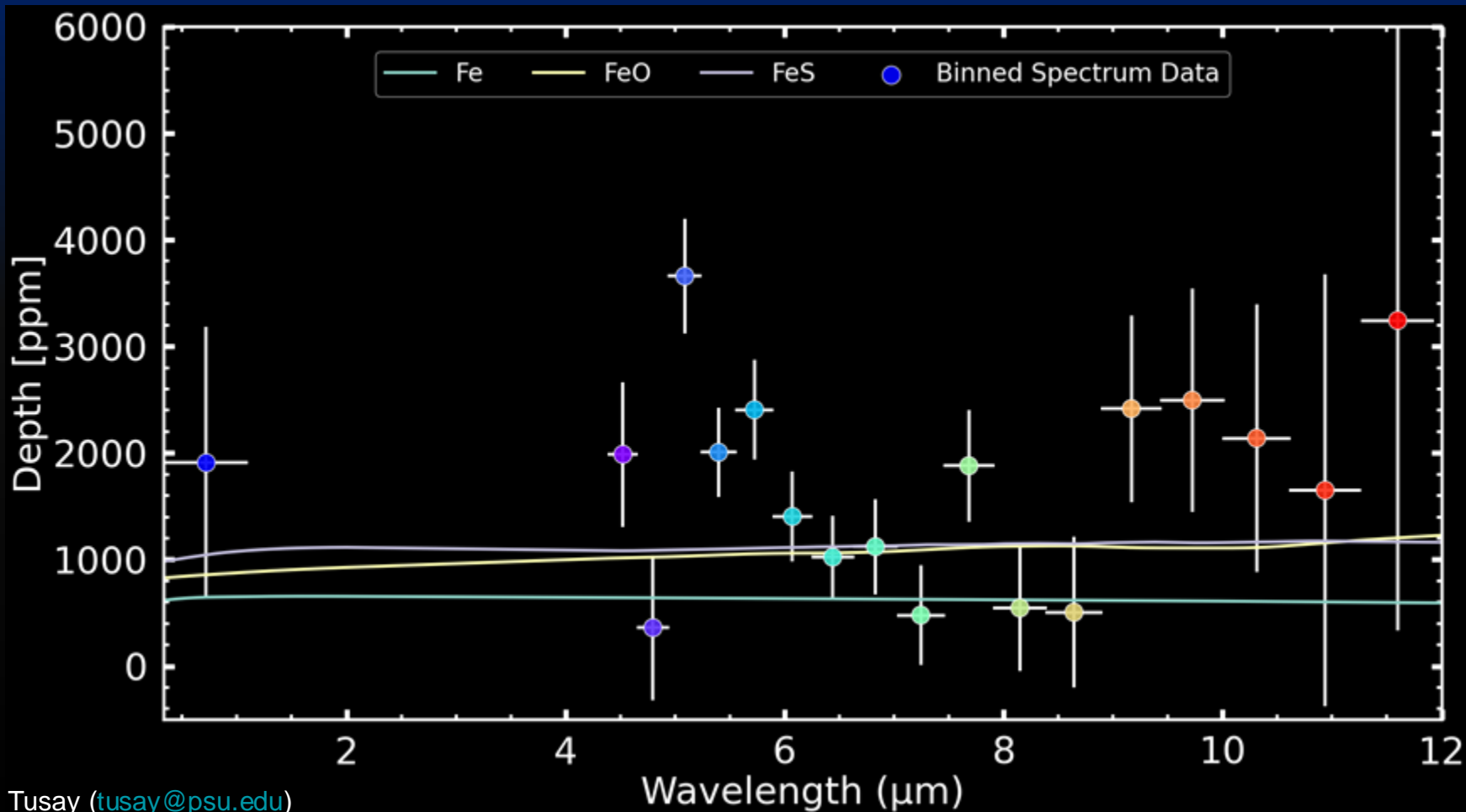
# JWST + CHEOPS Spectrum



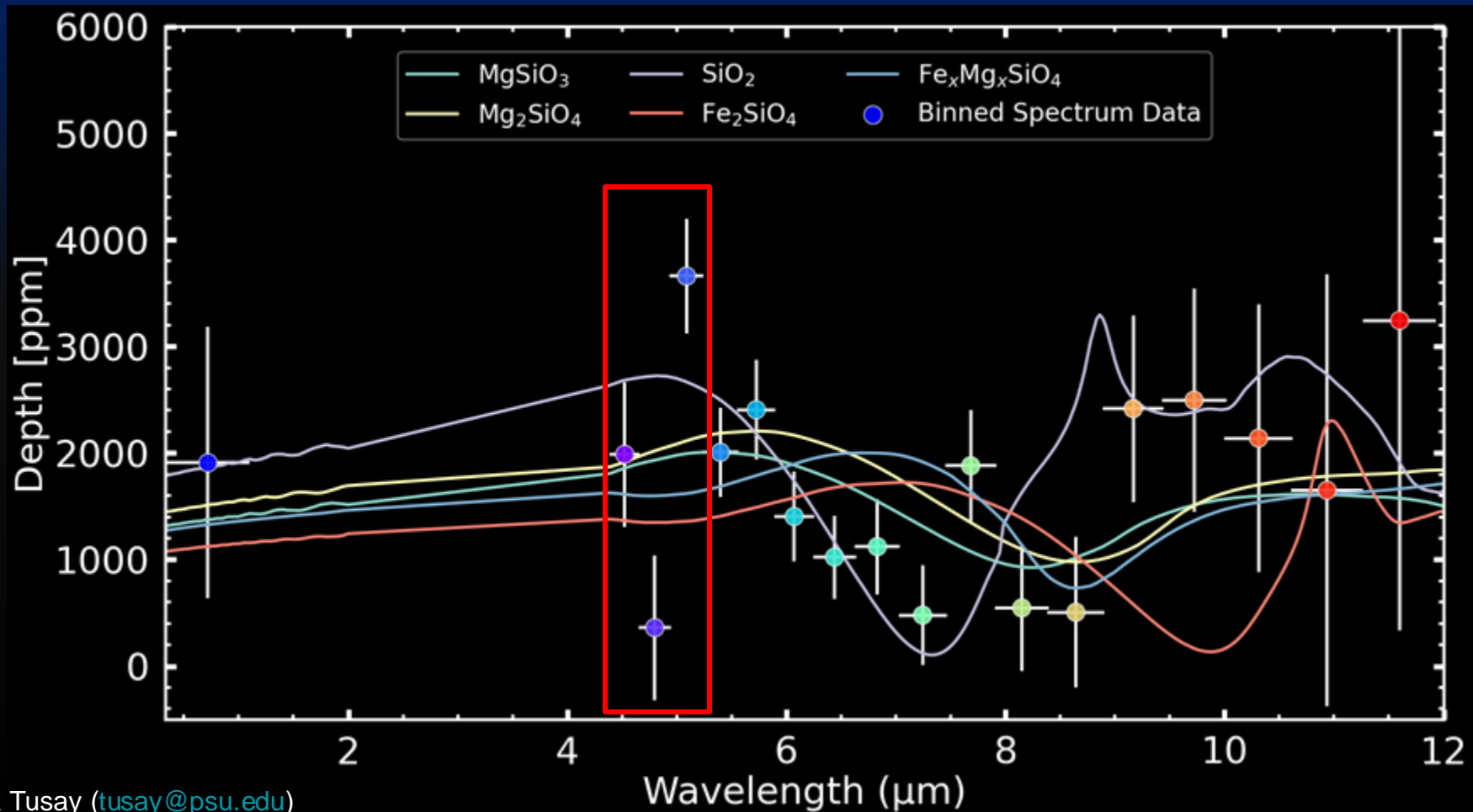
# Mineralogy Models



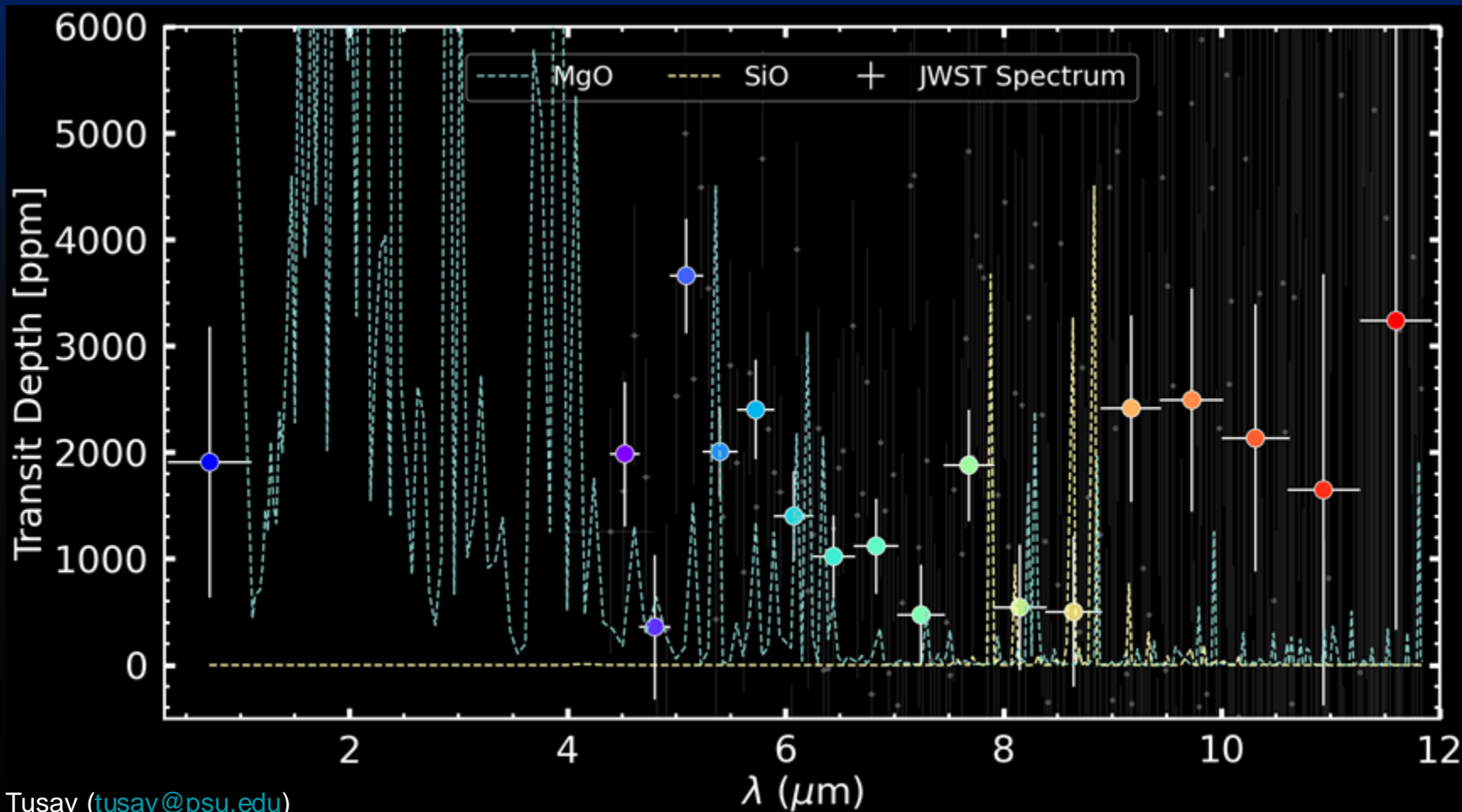
# Inconsistent with a Bare Core



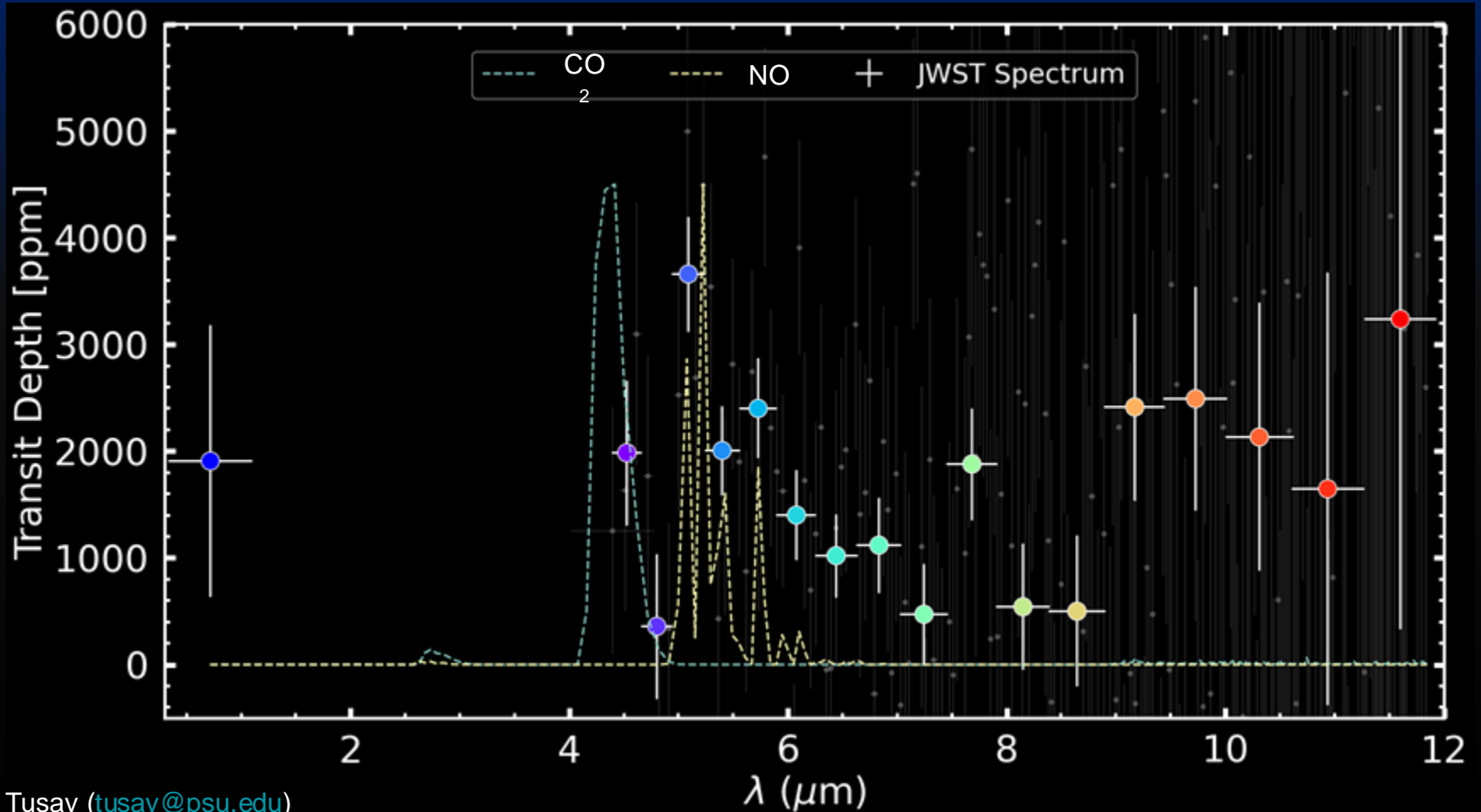
# Consistent with some Mantle Minerals



# Inconsistent with Rock Vapor

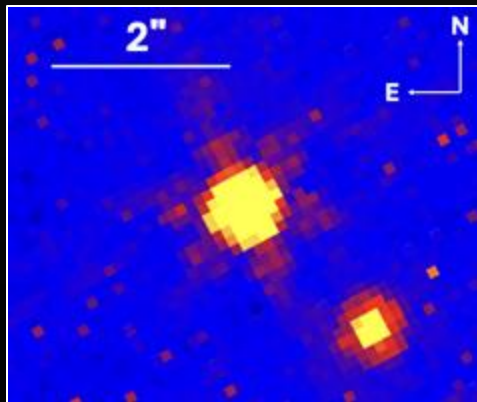


# Consistent with some “Ice” Vapor



# Conclusion

- First MIR spectrum of K2-22b
- Likely not just a bare core
- Opacity probably due to mixture of dust AND gas
- Unexpected short-wavelength features: NO & CO<sub>2</sub>?
- Paper posted to arxiv
- Submitted to ApJ Letters



arXiv

