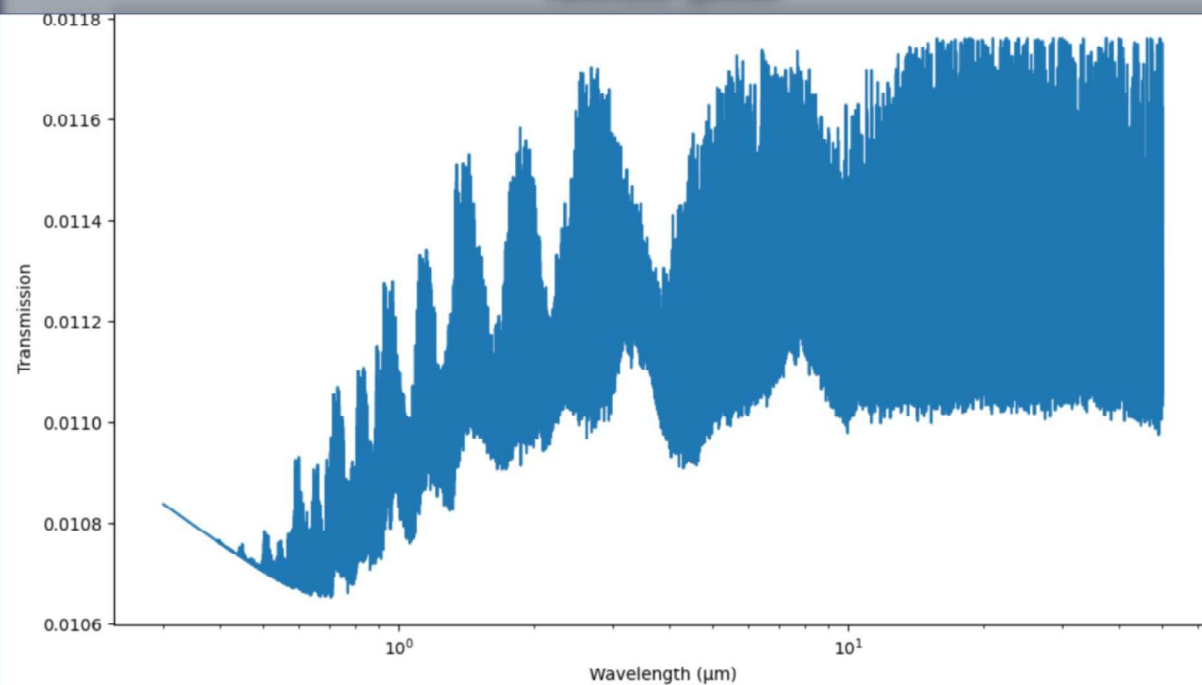




Orchestral

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The basic transmission forward model for a generic hot Jupiter with some typical molecule abundances has been generated successfully. I have set molecular abundances as approximate values for H₂O, CH₄, CO₂, CO, and NH₃.

Here is the transmission spectrum plot for this hot Jupiter model. If you want, I can further customize the model or analyze the spectrum for you.

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User

Can you predict the equilibrium chemistry for wasp-39b?

Agent

```
tool call:
getexoplanetparameters(planet_name="WASP-39 b", columns=['pl_eqt'])
```

```
response:
Parameters for WASP-39 b:
```

Equilibrium Temp: 1166 K

```
tool call:
runfastchemequilibrium(temperature="1166", co_ratio="0.54", species=['H2O', 'CH4',
'CO2', 'CO', 'NH3'], top_n="0")
```

```
response:
FastChem equilibrium at T=1166.0 K, P=1 bar
Convergence: convergence ok
```

Mixing ratios (mole fraction):

H2O : 5.4347e-04
CH4 : 2.2139e-04
CO2 : 1.1919e-07
CO : 2.3266e-04
NH3 : 1.3822e-06

The predicted equilibrium chemistry for WASP-39 b at its equilibrium temperature of approximately 1166 K with a solar C/O ratio (~0.54) at 1 bar pressure gives the following mixing ratios (mole fractions):

- H2O: 5.4×10^{-4}
- CH4: 2.2×10^{-4}
- CO2: 1.2×10^{-7}
- CO: 2.3×10^{-4}

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