appendix: data analysis by python

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[ ]:
```
import matplotlib.pyplot as plt
import numpy as np

#
t = np.array([80.56, 71.48, 65.83, 64.67, 64.39, 64.51, 65.06, 78.32, 74.66, 70.
 ↪55, 66.78]) - 0.2
x = [1, 0.932, 0.862, 0.734, 0.69, 0.55, 0.416, 0.065, 0.089, 0.139, 0.275]
y = [1, 0.853, 0.745, 0.703, 0.696, 0.679, 0.64, 0.065, 0.151, 0.262, 0.538]

#
t -= 0.2

#
x_fit = np.polyfit(x, t, 6)
#  y          6
y_fit = np.polyfit(y, t, 6)

plt.figure()

#
plt.scatter(x, t, label='x: gas phase')
plt.scatter(y, t, label='y: liquid phase')

#
x_line = np.linspace(min(x), max(x), 100)
y_line = np.linspace(min(y), max(y), 100)
plt.plot(x_line, np.polyval(x_fit, x_line), label='x fit')
plt.plot(y_line, np.polyval(y_fit, y_line), label='y fit')

plt.xlabel('Composition')
plt.ylabel('Temperature (°C)')
plt.legend(loc='upper left')
plt.text(-0.05, 62, 'Ethanol', fontsize=10)
plt.text(1.03, 62, 'Hexane', fontsize=10)
plt.annotate('t=64.39°C x=0.69', xy=(0.69, 64.39), xytext=(0.5, 65),␣
 ↪arrowprops=dict(facecolor='black', shrink=0.5, width=0.5, headwidth=5))
plt.show()
```