

秋荷一滴露

——从叶片接触角测量到表面结构模拟的科普探究实验

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Drop of Dew on the Lotus: Popular Science Experiment Concerning Blade Contact Angle Measurements for Surface Structure Simulations

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Python程序代码：

```
import pyautogui as pag
import matplotlib.pyplot as plt # plt 用于显示图片
import matplotlib.image as mpimg # mpimg 用于读取图片
import math
import _thread

def showfig(fig):
    img = mpimg.imread(fig)
    plt.imshow(img)
    plt.show()
    print('end')

def get_position():
    input("请选择底边第一顶点，按 Enter 确认")
    x1, y1 = pag.position() # 返回鼠标的坐标
    input("请选择底边第二顶点，按 Enter 确认")
    x2, y2 = pag.position() # 返回鼠标的坐标
    input("请选择水滴最高点，按 Enter 确认")
    x3, y3 = pag.position() # 返回鼠标的坐标

    length = math.sqrt((x1 - x2)**2 + (y1 - y2)**2)
    height = math.sqrt(((x1 + x2)/2 - x3)**2 + ((y1 + y2)/2 - y3)**2)

    if 2 * height < length:
        degree = math.degrees(math.asin(1/(height/length+length/(4 * height))))
    else:
        degree = 180 - math.degrees(math.asin(1/(height/length+length/(4 * height))))

    print()
    print("-----")
    print()
    print("底边长为", length)
    print()
    print("高为", height)
    print()
    print()
    print("接触角为 {:. 0f}度".format(degree))
    print()
    print()
    print("计算结束，请关闭图片窗口。")
    print()
```

```
print("-----")
```

```
def main():  
    _thread.start_new_thread(get_position, ())  
    showfig()  
  
if __name__ == "__main__":  
    main()
```

程序运行界面图：

请选择底边第一顶点，按 Enter 确认
请选择底边第二顶点，按 Enter 确认
请选择水滴最高点，按 Enter 确认

底边长为 473.00951364639593

高为 166.50675661966395

接触角为70度

计算结束，请关闭图片窗口。