

# Supplementary Materials

## *Unveiling the Mechanics Behind Polyimide's Friction-Greening Phenomenon*

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### Contents

1. Chemical structure of PI.....	2
2. TGA-MS of PAA .....	2
3. TGA curves of three samples.....	2
4. XPS of three samples.....	3
5. AFM images of three samples. ....	3
6. Storage modulus curves of three PI samples .....	3
7. XRD of three samples .....	4
8. UV-visible spectrum of three samples .....	4

## 1. Chemical structure of PI

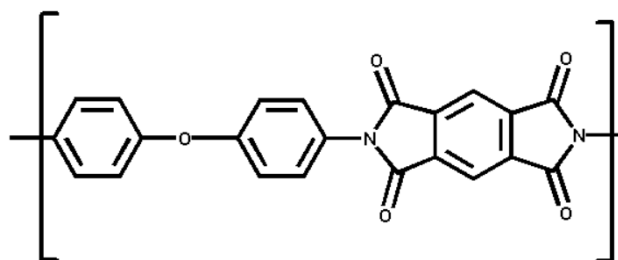


Figure S1. Chemical structure of PI.

## 2. TGA-MS of PAA

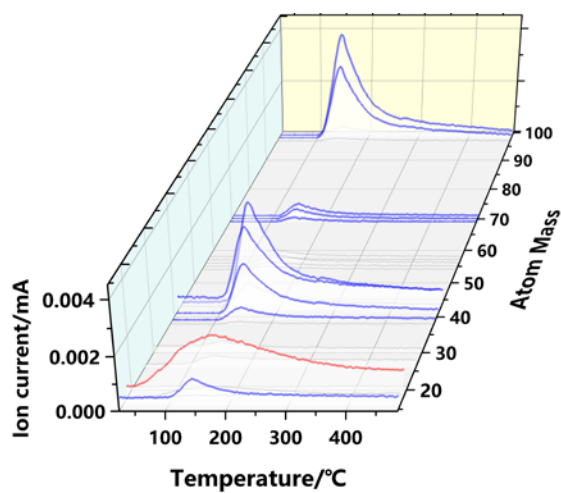


Figure S2. TGA-MS of PAA. Blue lines: NMP; red line:s H<sub>2</sub>O.

## 3. TGA curves of three samples

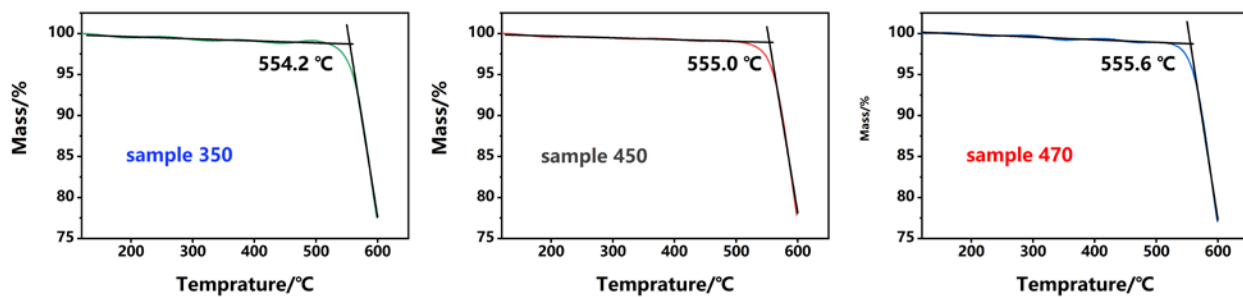


Figure S3. TGA curves of three samples.

#### 4. XPS of three samples.

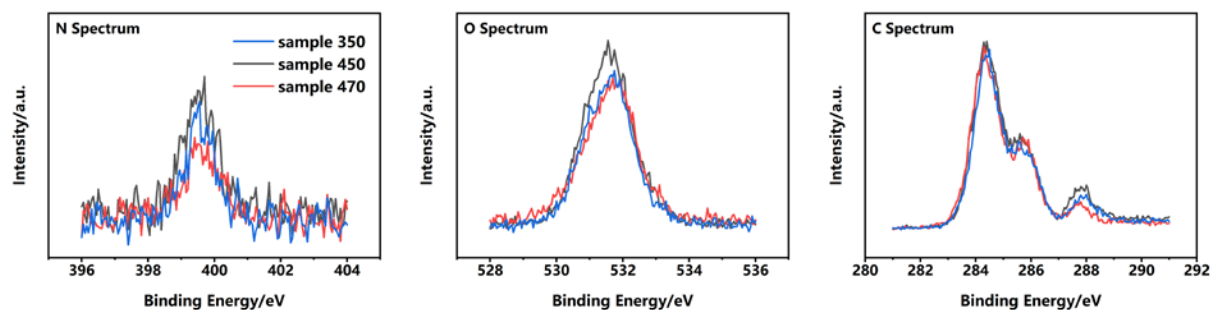


Figure S4. XPS of three samples. Blue lines: sample 350; gray lines: sample 450; red lines: sample 470.

#### 5. AFM images of three samples.

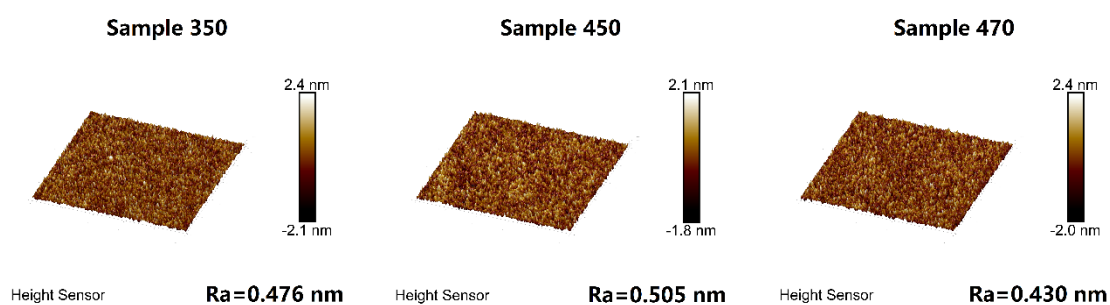


Figure S5. AFM images of three samples.

#### 6. Storage modulus curves of three PI samples

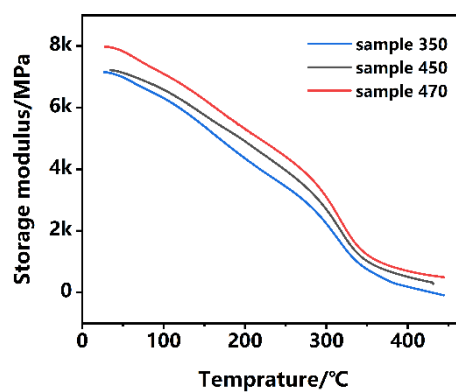
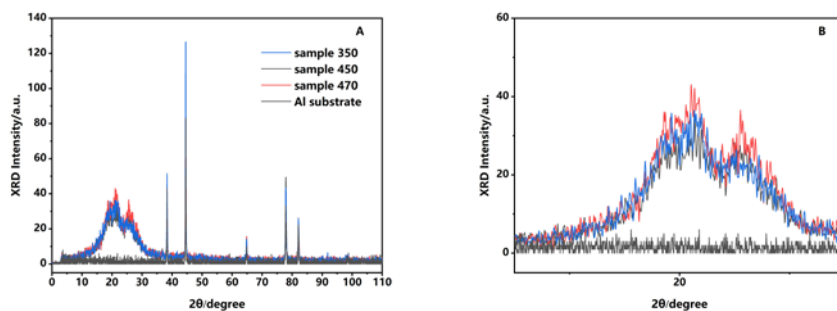


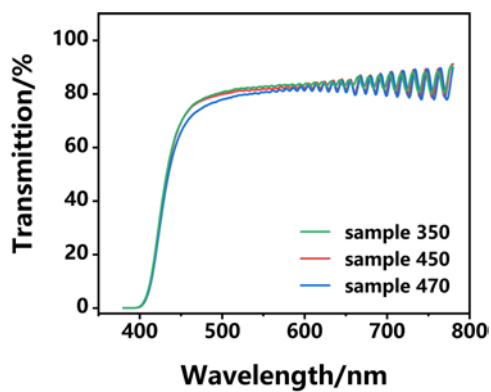
Figure S6. Storage modulus curves of three PI samples.

## 7. XRD of three samples



**Figure S7.** XRD of three samples. Blue lines: sample 350; gray lines: sample 450; red lines: sample 470; black lines: Al substrate.

## 8. UV-visible spectrum of three samples



**Figure S8.** UV-visible spectrum of three samples. Blue lines: sample 350; gray lines: sample 450; red lines: sample 470; black lines: Al substrate.