

# A CONTINUOUS FLOW GENERATOR OF ACETYL NITRATE FOR THE CHALLENGING PREPARATION OF NITROFURAN PHARMACEUTICALS

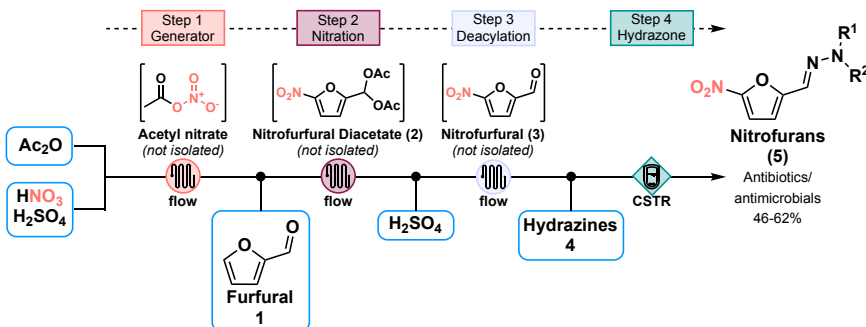
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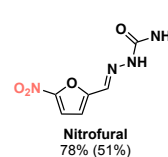
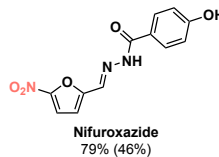
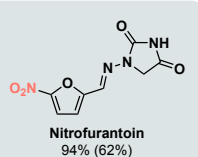
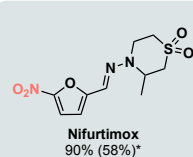
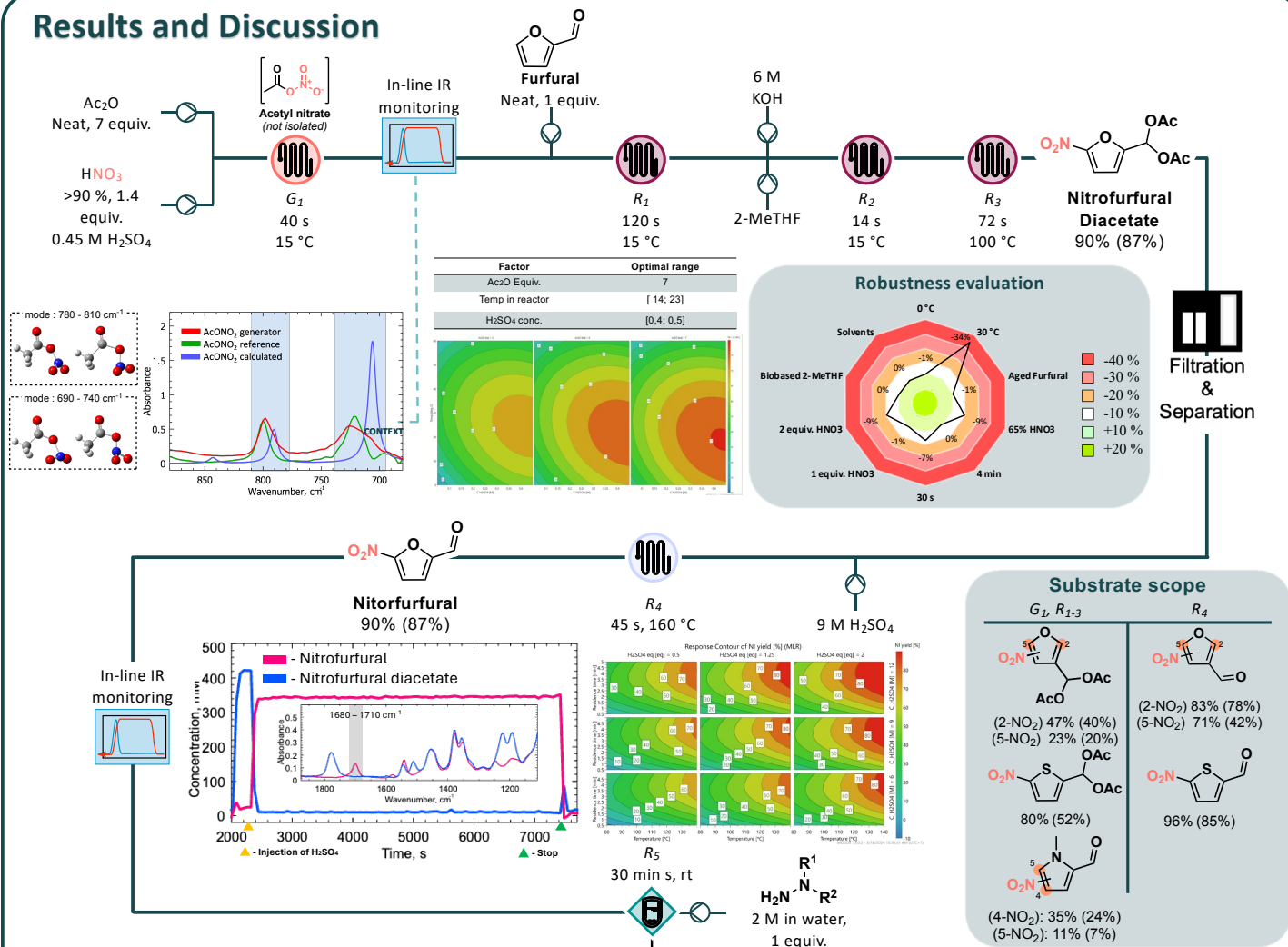
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## Context and aim

- Nitrofurural is the central building block for nitrofuran antibiotics
- Furfural is a fragile scaffold prone to ring opening and polymerization
- Furfural nitration requires acetyl nitrate as a milder nitrating agent
- Acetyl nitrate is unstable and highly sensitive
- Nitrofurantoin: WHO essential and 135<sup>th</sup> most prescribed in 2021
- Nifurtimox: WHO essential against Chagas' disease



## Results and Discussion



## Conclusion

- Safe acetyl nitrate generation
- Robust nitration
- <5 min from furfural to nitrofurural
- 67% yield over four steps
- 7 g·h<sup>-1</sup> output, low 18 e-factor
- Concatenated preparation of APIs
- In-line IR monitoring at key steps

