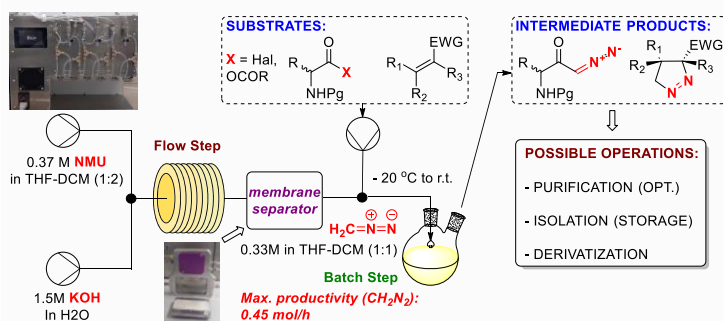


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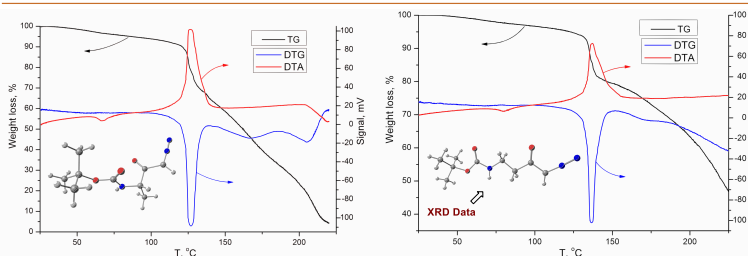
Background of the project

Dry Diazomethane in Flow: Safety, Large Scale, Wide Diversity of Products

- A flow system for generating diazomethane enables the synthesis of MedChem building blocks and intermediates with productivity up to 0.45 mol/h, **scalable to hundreds of grams per operation**.
- Diazoketones, synthesized using this system, are **valuable, bench-stable reagents** on their own, and can be used for **synthesis of 2,4-thiazoles² and pyrazoles**, as well as other cyclization reactions.
- The use of flow photoreactor enables the synthesis of **β -amino acids³, azetidinones, piperidinones, and cyclopropanes**, with the **preservation of chirality** of the starting acids for diazoketones and their derivatives.

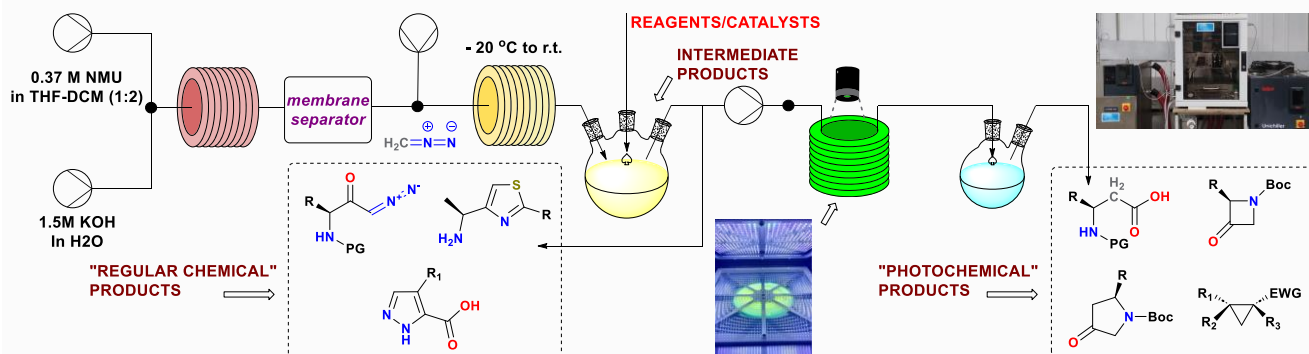


Amino Acid-Derived Diazoketones (AADDKs) Thermal Stability Summary: Safe, Bench Stable

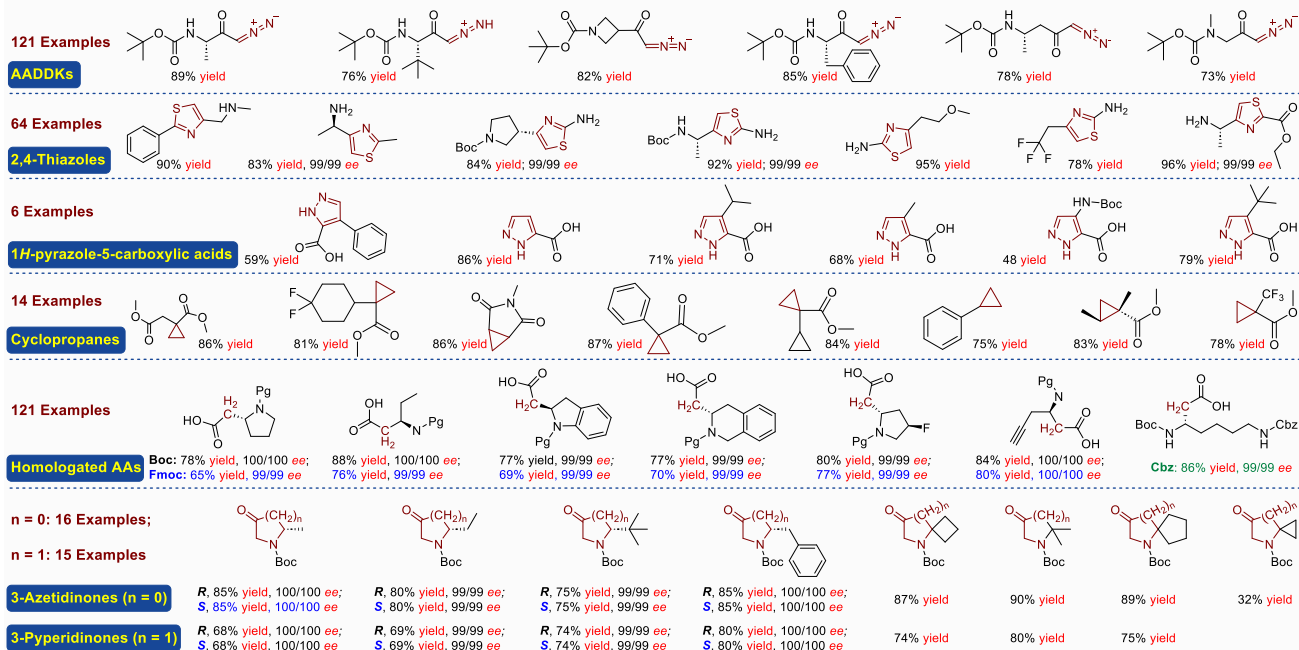


- AADDKs remain stable after a year at room temperature, showing promise as **bench-stable synthetic equivalents for halogenoketones**.
- TGA of diazoketones show their decomposition between 110-142 °C, exothermically, indicating **medium thermal risk and reaction hazard indices**.

Flow-Generated Diazomethane in Reaction Cascade: Setup and Scope of the Products



Synthetic results



Contact

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References

- Pendiukh V. V. et al. *Org. Process Res. Dev.* **2024**, 28, 165–176;
- Pendiukh V. V. et al. *ChemRxiv* **2024**, DOI: 10.26434/chemrxiv-2024-r2knw;
- Pendiukh V. V. et al. *ChemRxiv* **2024**, DOI: 10.26434/chemrxiv-2024-fqld6;