



Introduction

Motivation and Design Strategy

Why Hydroxide Conduction is important?

Renewable Energy source

Non-precious metal catalysts

Lower Operating Voltage

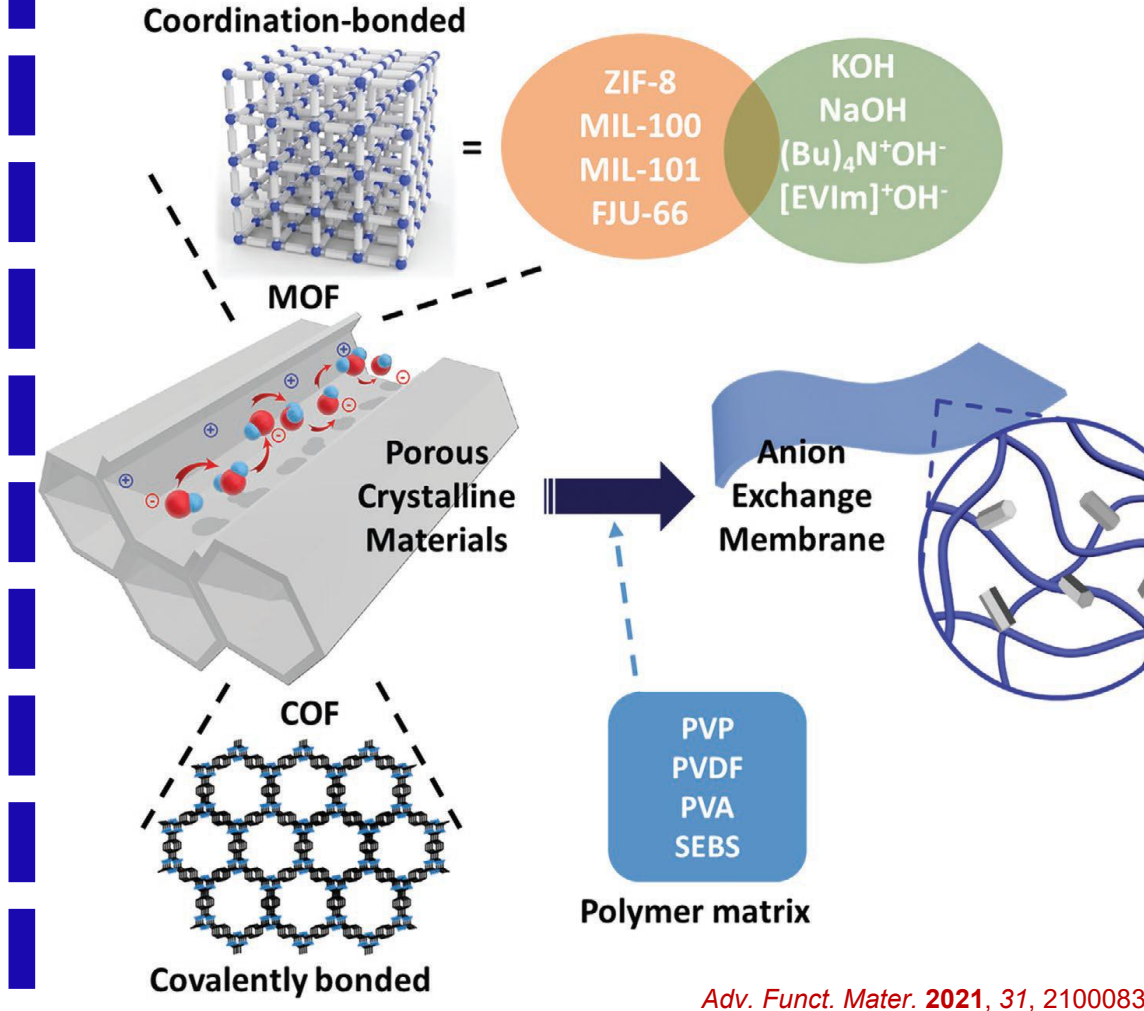
Lower activation energy

Cost Effective

Improved Reaction Kinetics

Fuel cell and Batteries

Hydroxide-conducting Porous Materials



Highly Stable

Enhanced Ion Transport

Structural Tunability

Cost Effective

Why porous Polymer?

- ❖ Ordered structure
- ❖ Tuneable surface area
- ❖ Extended Network topology
- ❖ Highly Stable
- ❖ Atomic accuracy

Advantages of Viologen

Highly Redox active

Undergo two one electron reduction

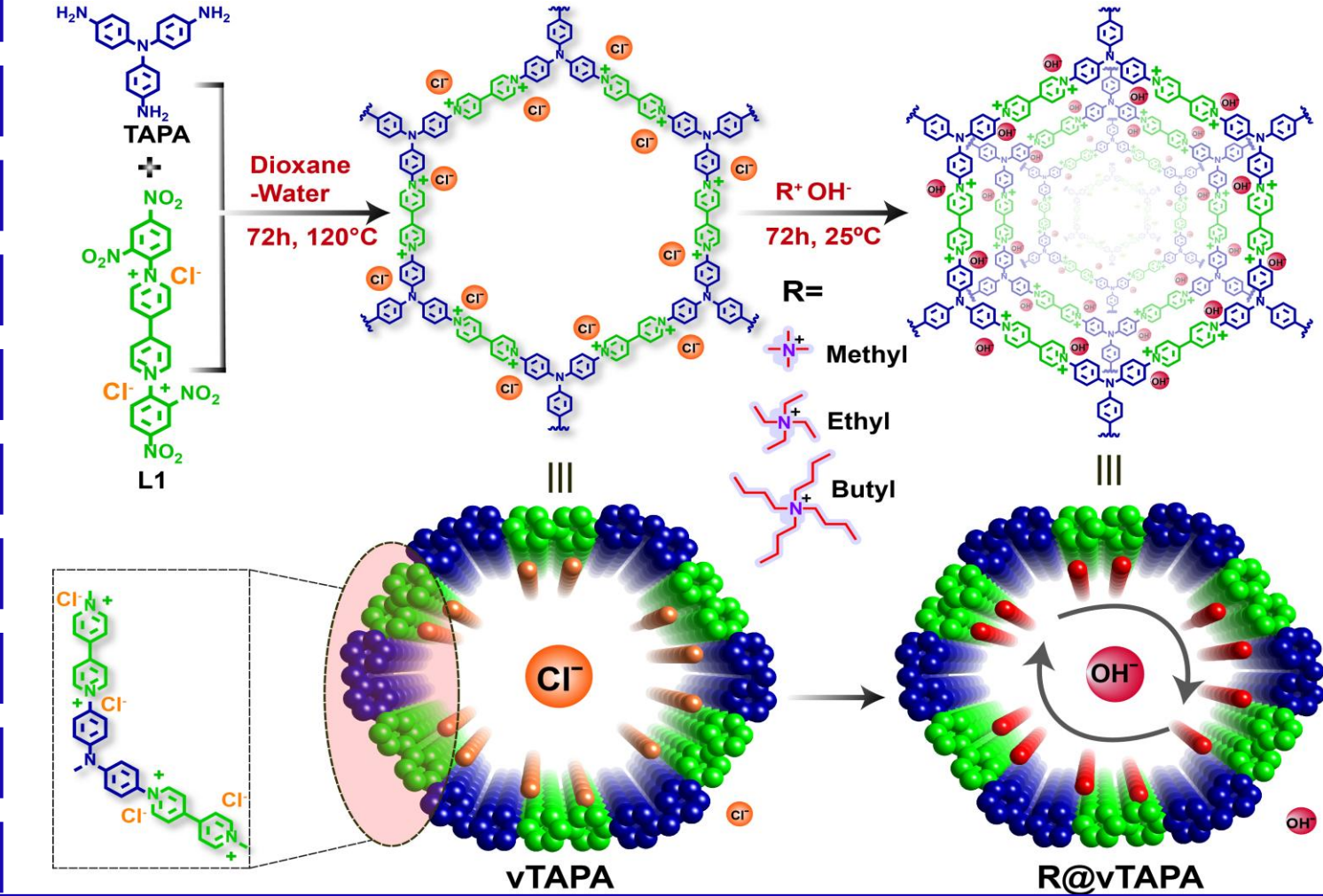
Exchangeable free anions

The cationic nature of frameworks enhances the stability

Objective

- ❖ Design and synthesize template-free viologen-based Covalent Organic Frameworks (vCOFs) through the solvothermal-assisted Zincke Reaction.
- ❖ Check the hydroxide conduction efficiencies of these vCOFs by using three mild tertiary ammonium salts (tetramethyl-, tetraethyl-, and tetrabutylammonium hydroxide)
- ❖ Our strategy is time-efficient and does not require a crucial synthetic procedure. We aim to develop advanced clean energy technologies and promote sustainable production methods.

Synthesis of vCOFs

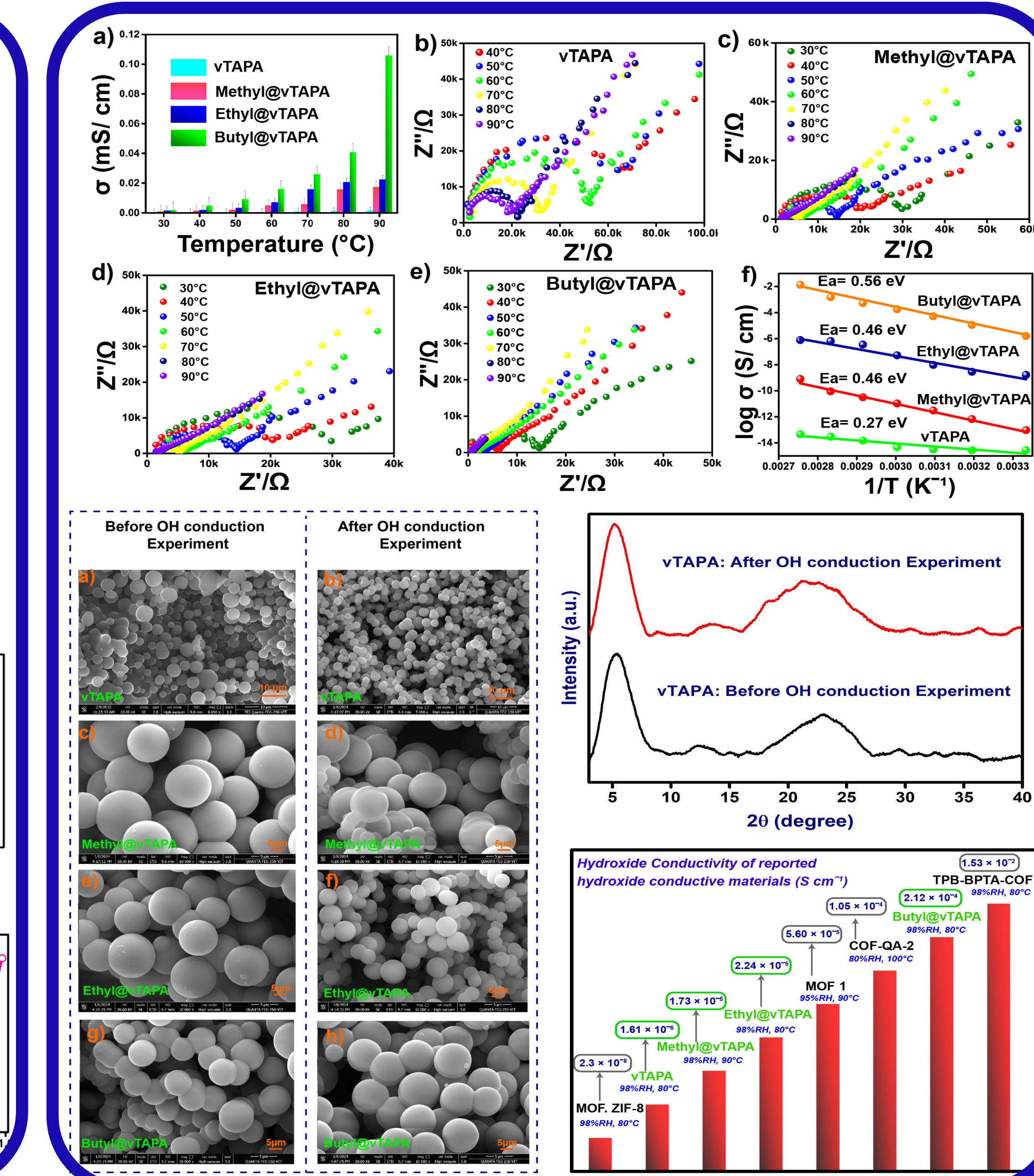
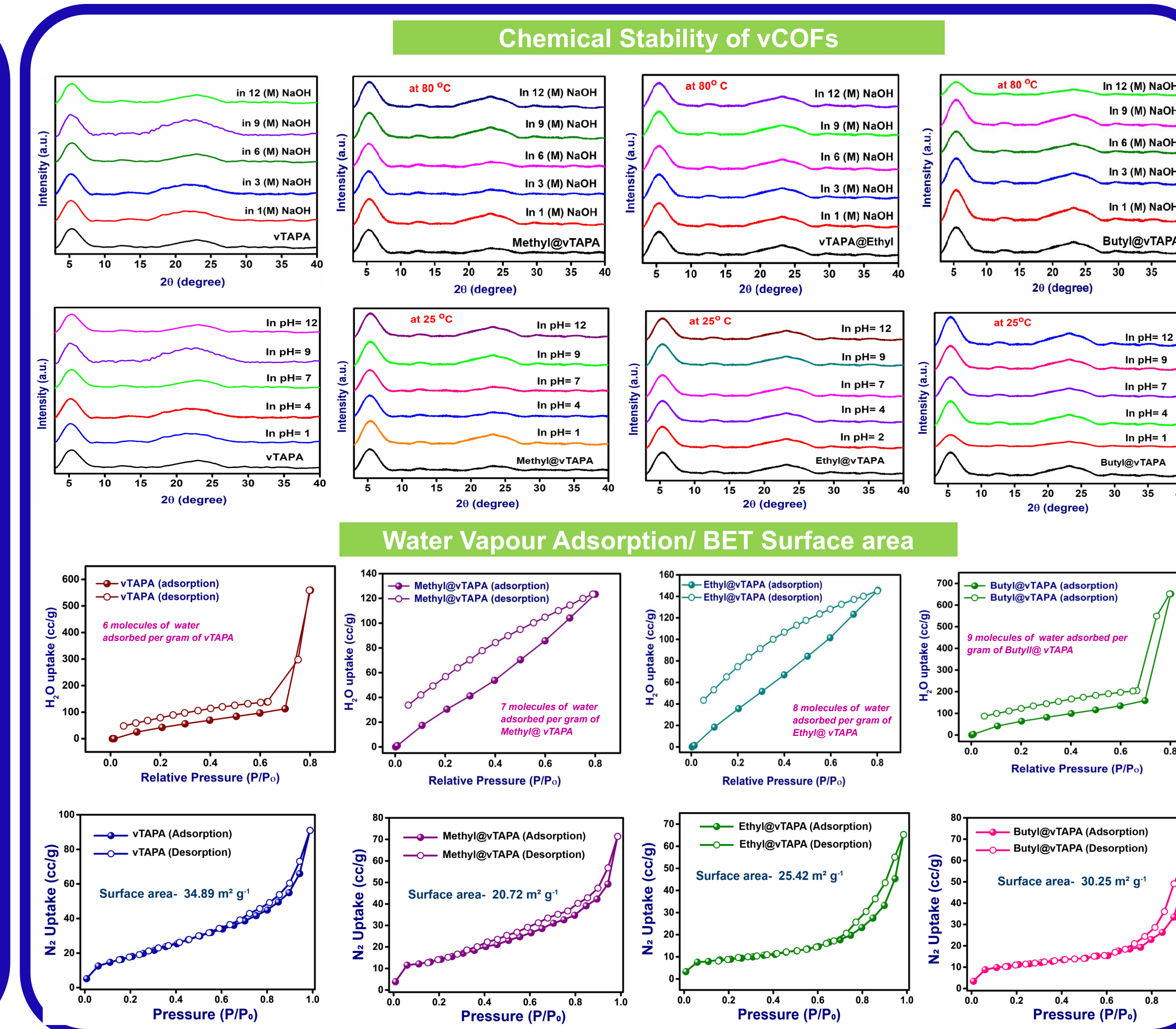
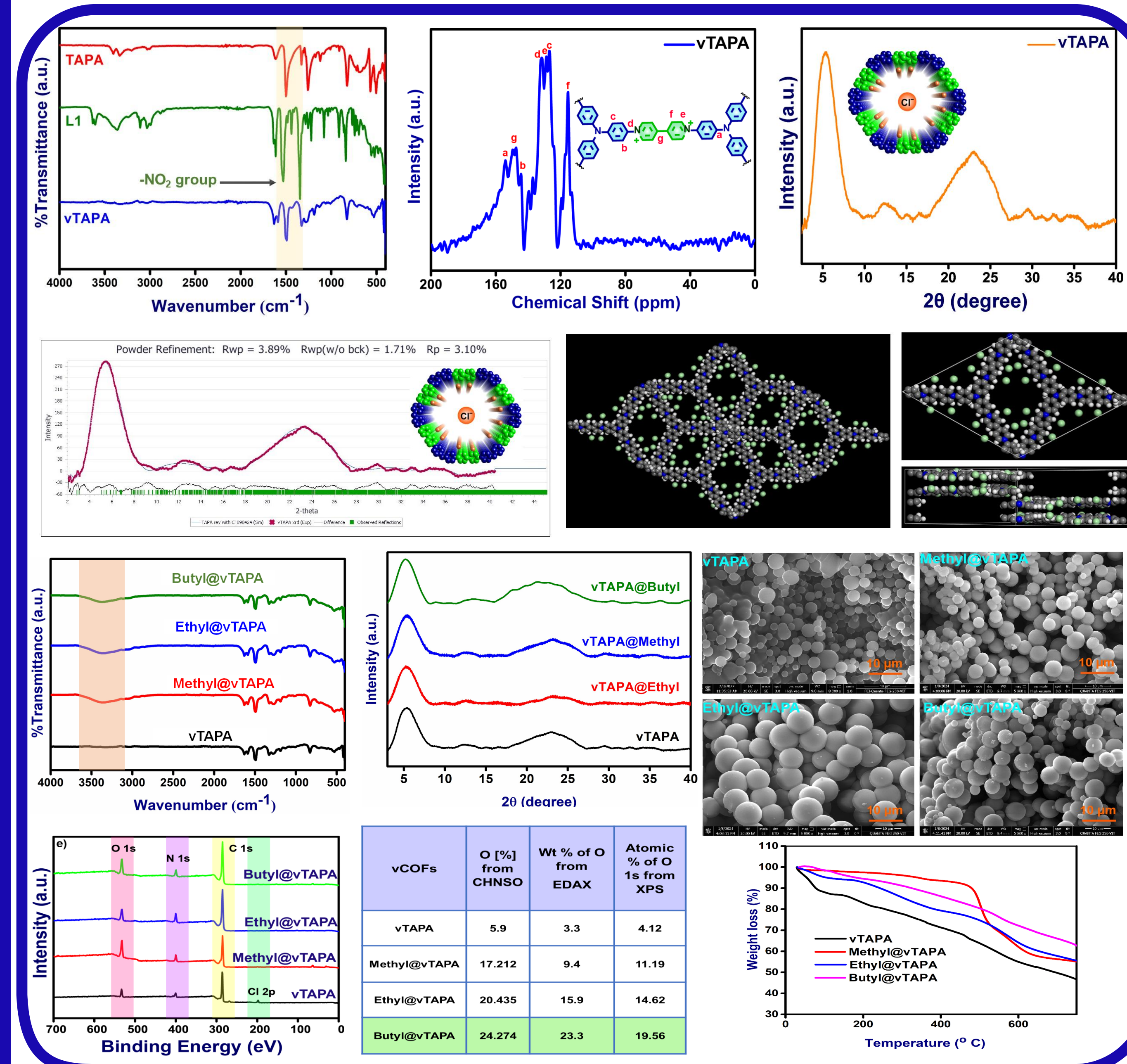


Characterization of vCOFs

Conduction Studies

DFT Studies

Important Outcome



Acknowledgment

