

Ekmandagarna 2019

Pecha Kucha

Sundblads Pecha Kucha

- 20 bilder visas 20 sekunder var
- Bedömningskriterier
 - Utförande (50%)
 - Innehåll (50%)
- Ledamöter i Juryn
 1. Birgitta Sundblad
 2. Monica Ek
 3. Anneli Petersson
 4. Rickard Wadsborn
 5. Publiken
 - Gå efter sista presentationen in på www.menti.com och ange koden 44 01 20
 - Fördela 100 poäng på de tio presentationerna, med lika vikt på Utförande och Innehåll.

1. Zeolites with a defined acidity and confinement prevent recondensation in acid-catalyzed lignin depolymerization

Elena Subbotina, Stockholms Universitet

Zeolites with a defined acidity and confinement prevent recondensation in acid-catalyzed lignin depolymerization

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INSTITUTO DE
TECNOLOGÍA
QUÍMICA



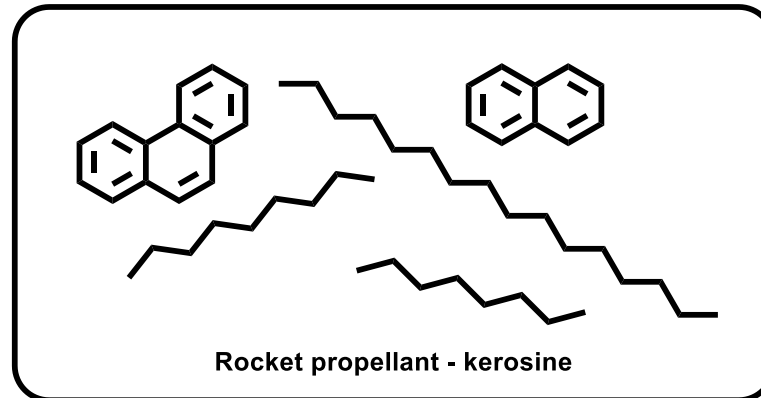
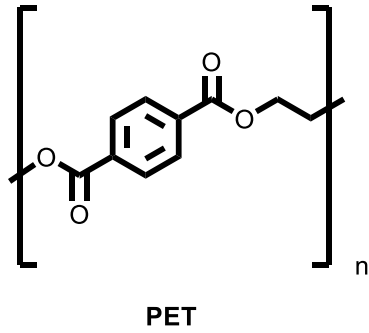
Zeolites for conversion of all components of woody biomass into valuable organic monomers

Elena Subbotina

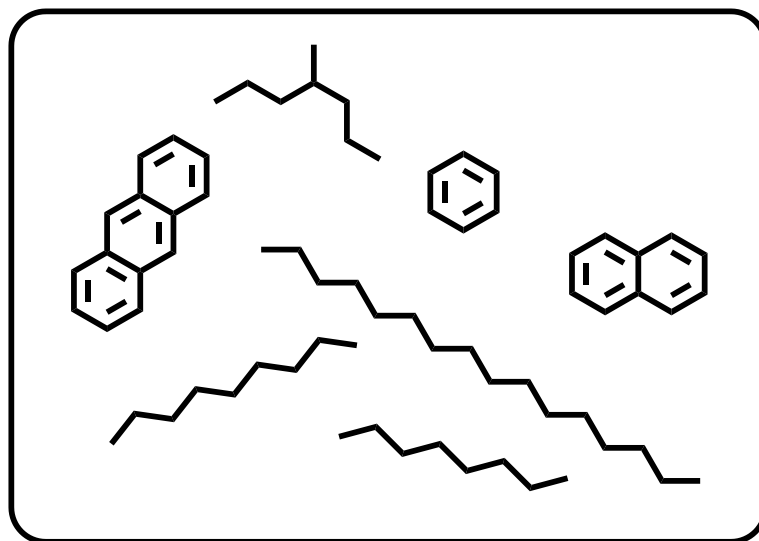


Stockholm
2019

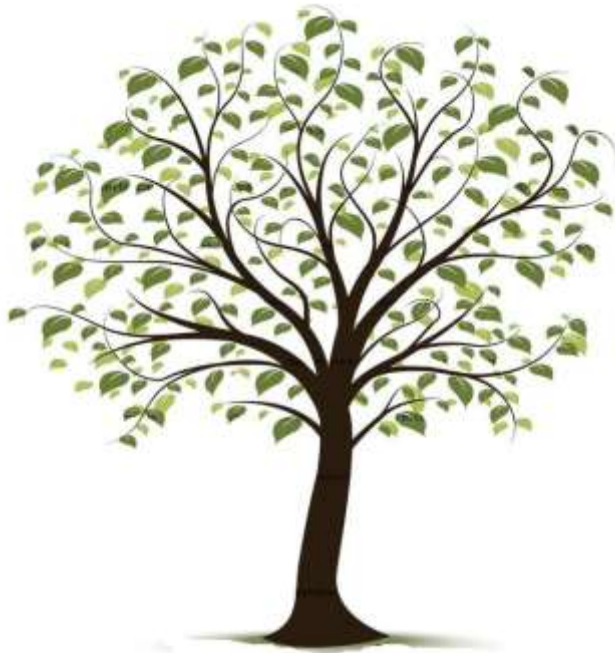
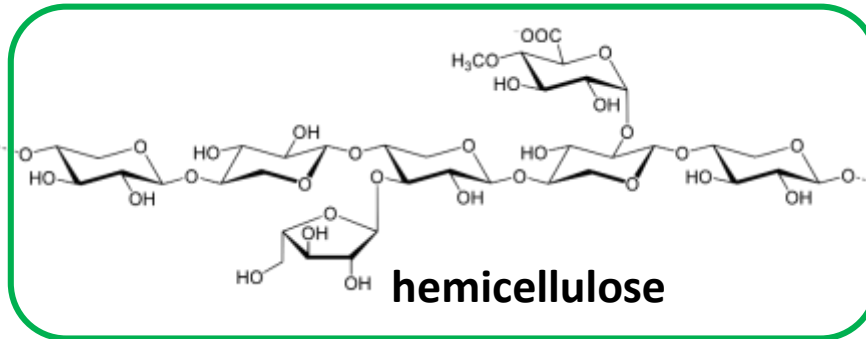
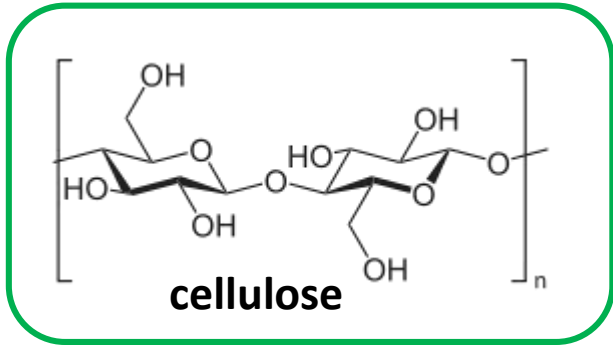
Introduction



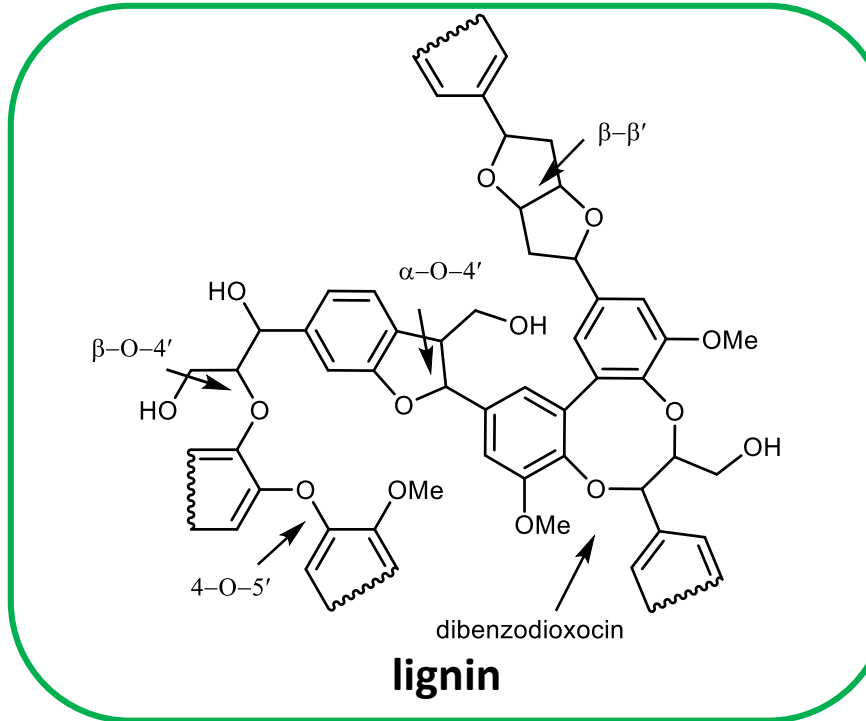
Introduction



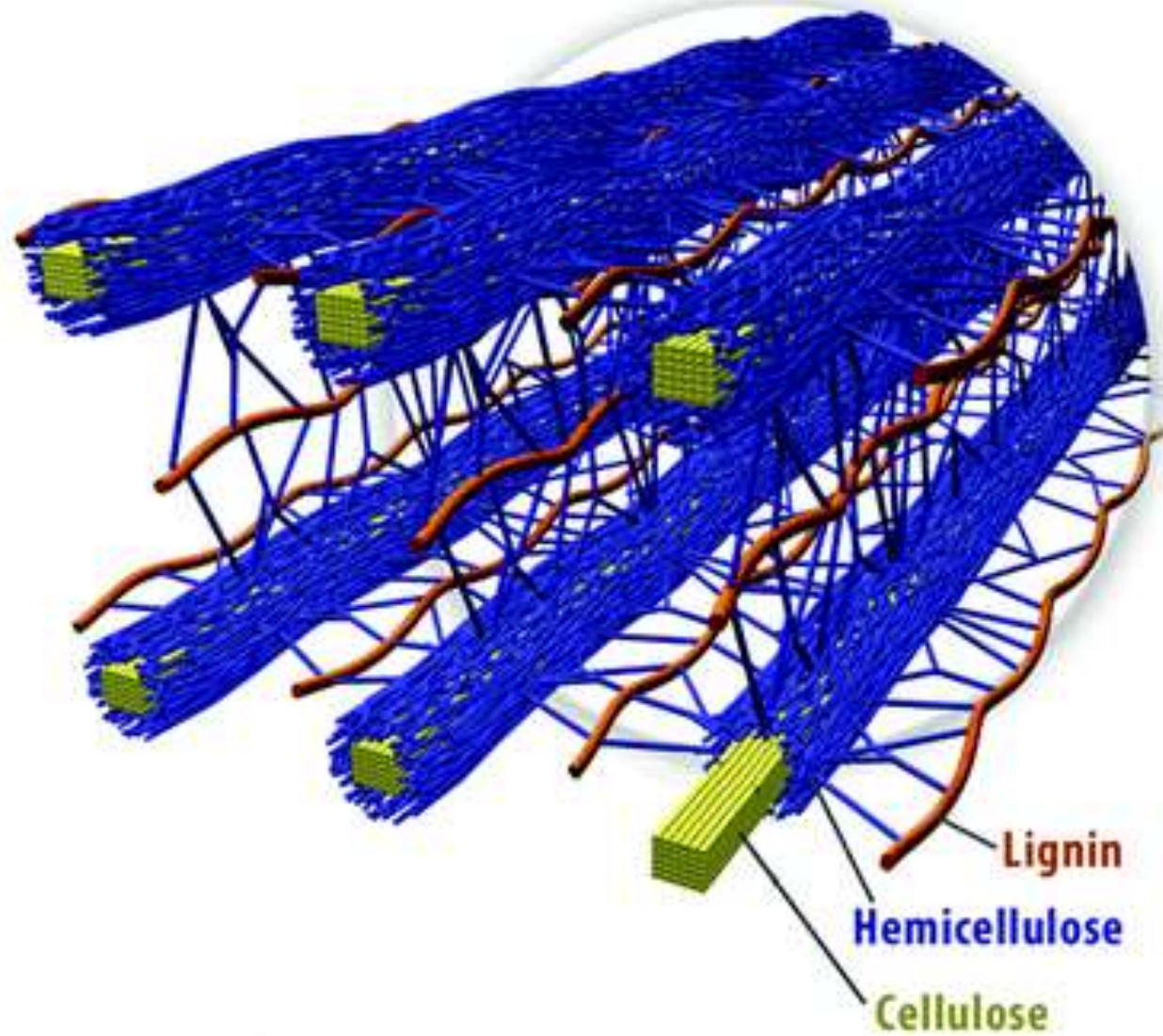
Introduction



biomass



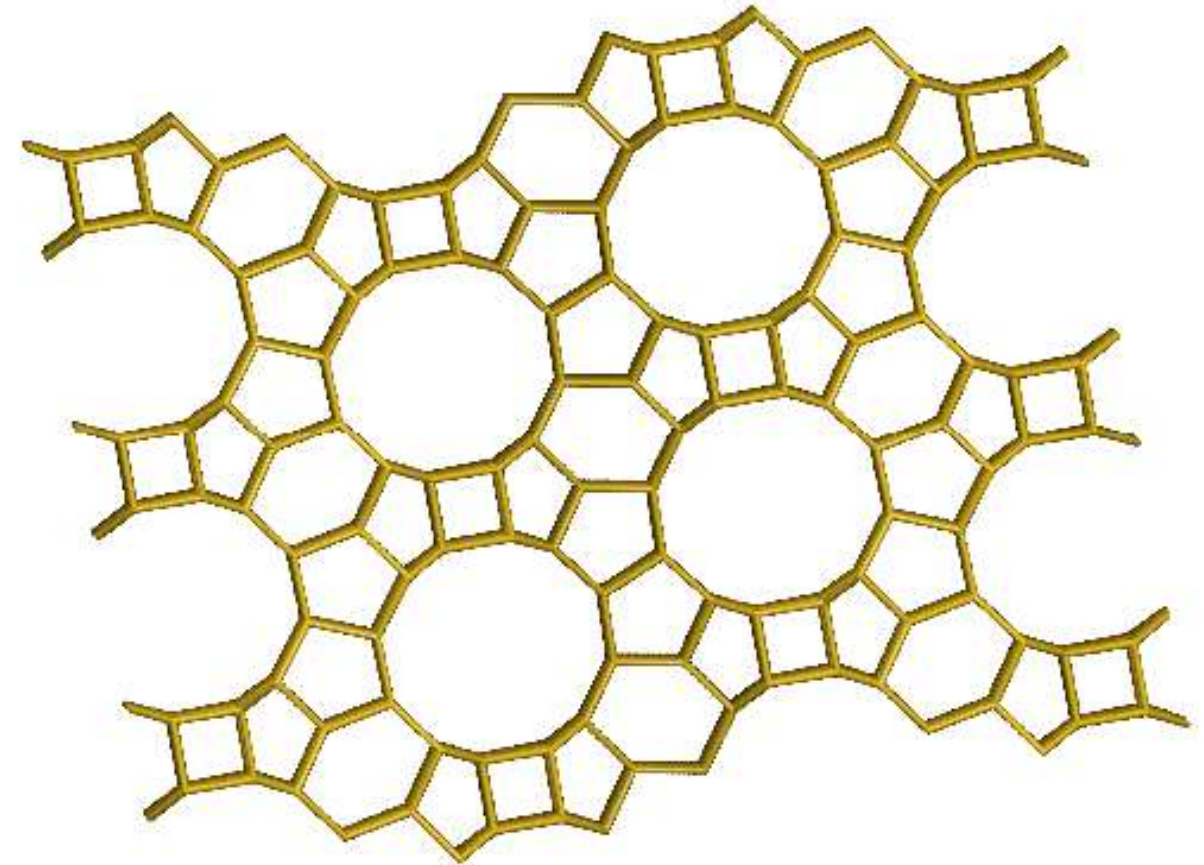
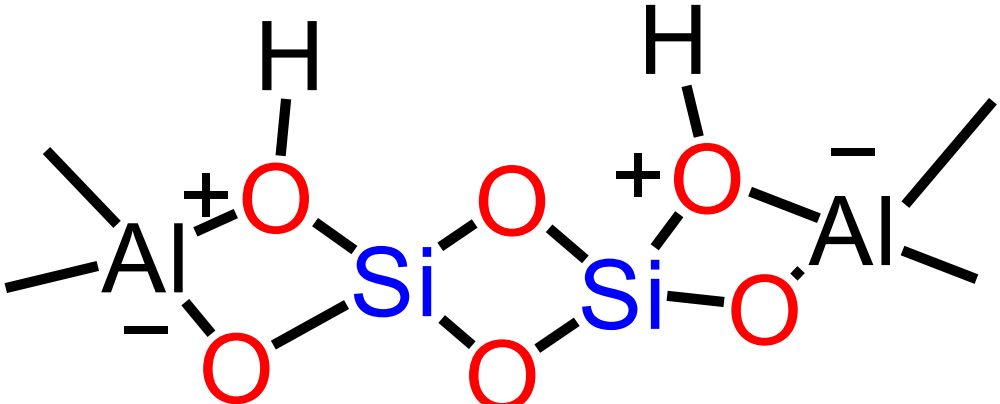
Introduction



Process design

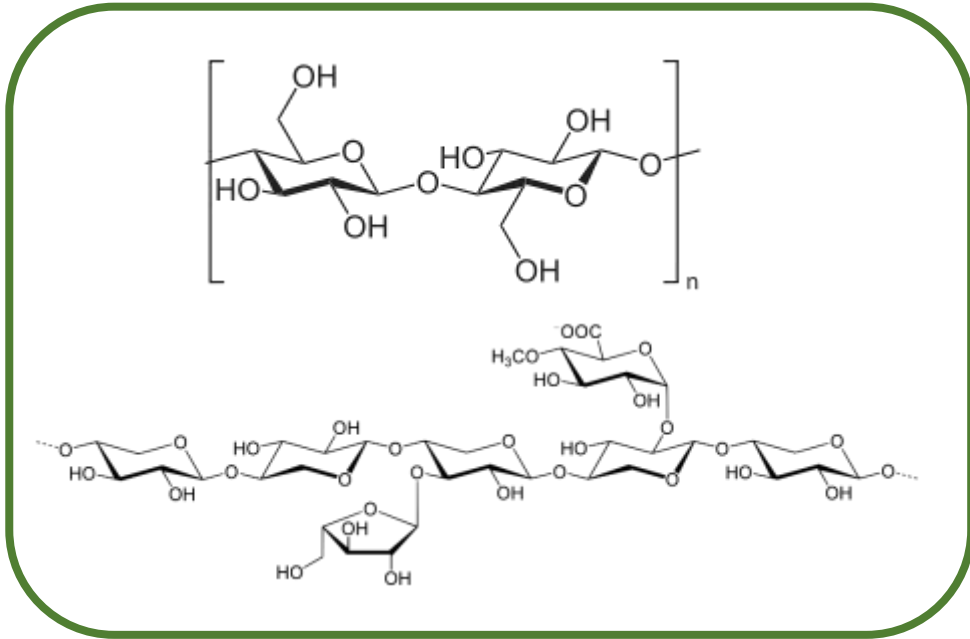


Process design

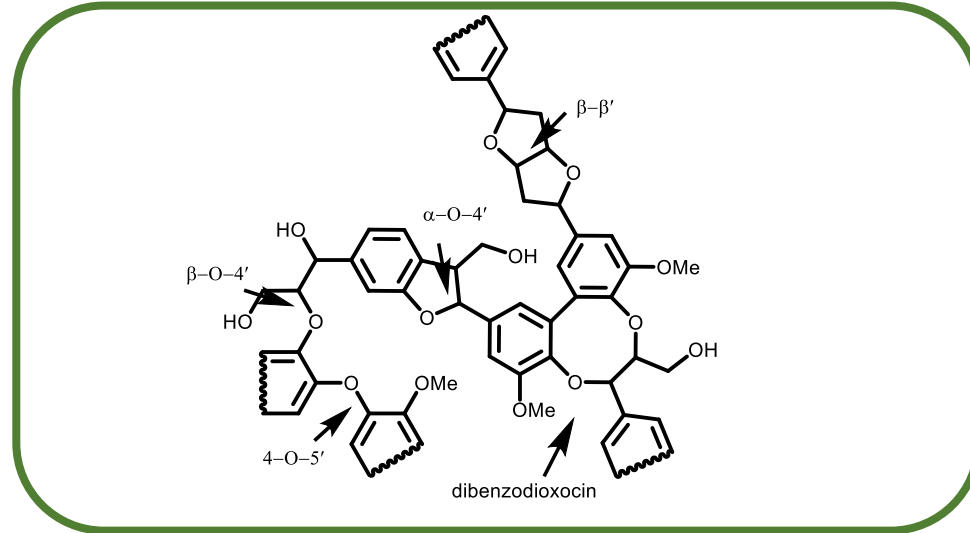
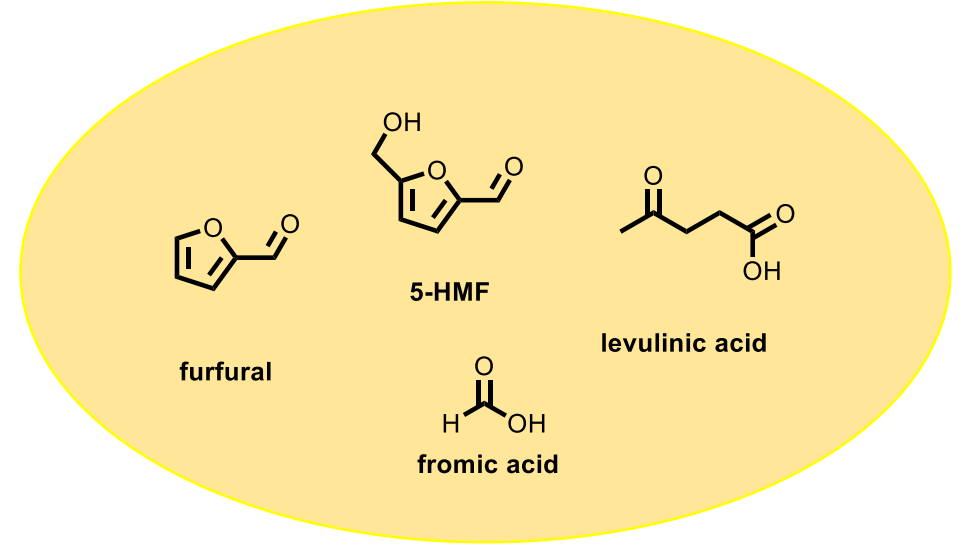


Zeolites

Process design



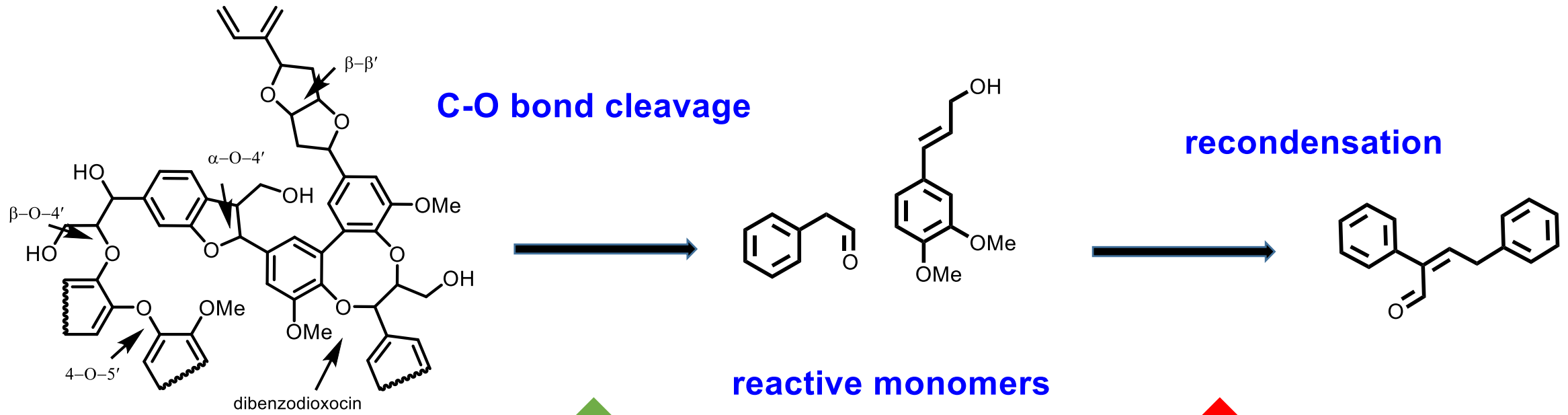
zeolites



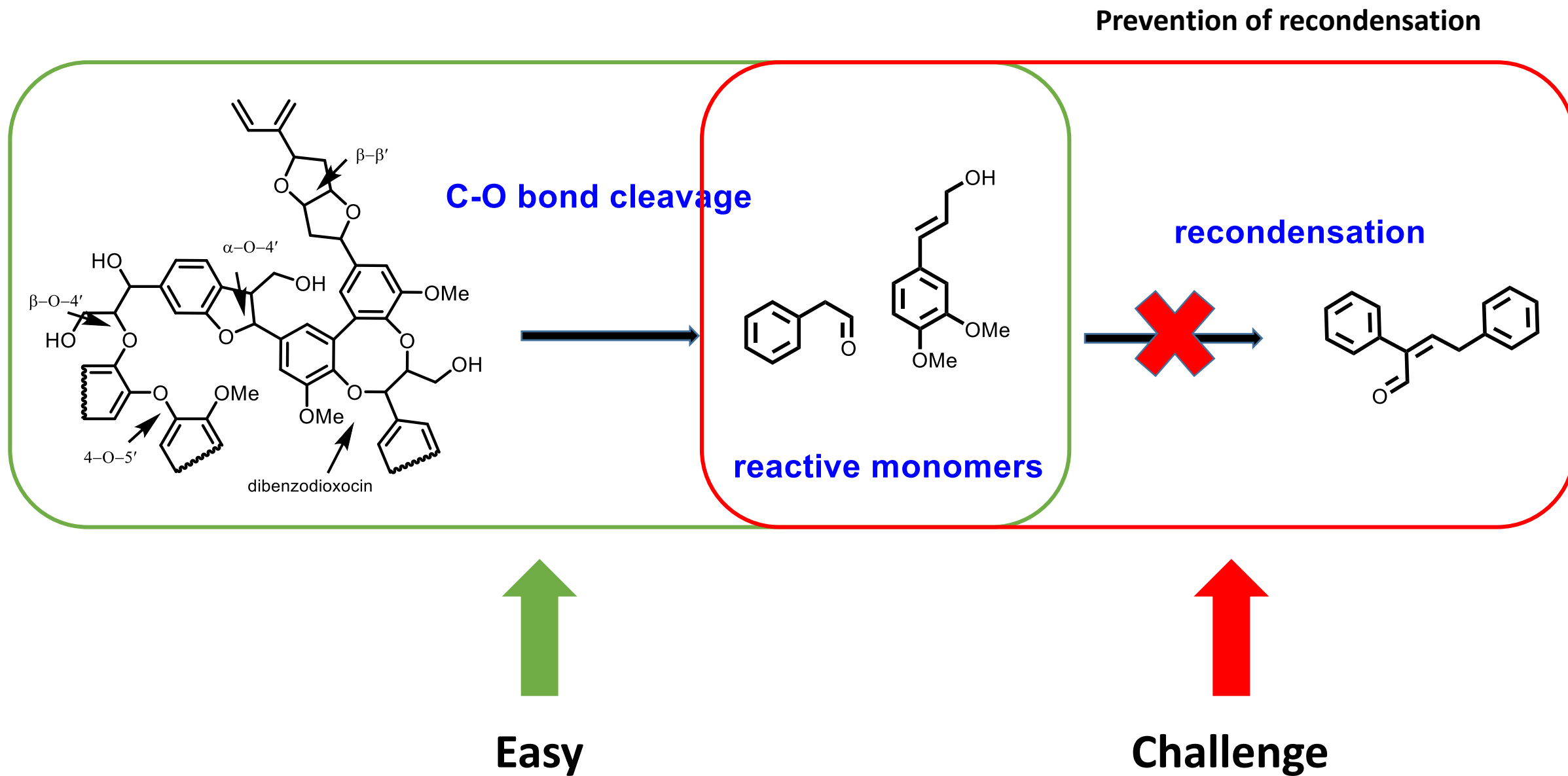
zeolites



Lignin valorization



Lignin valorization

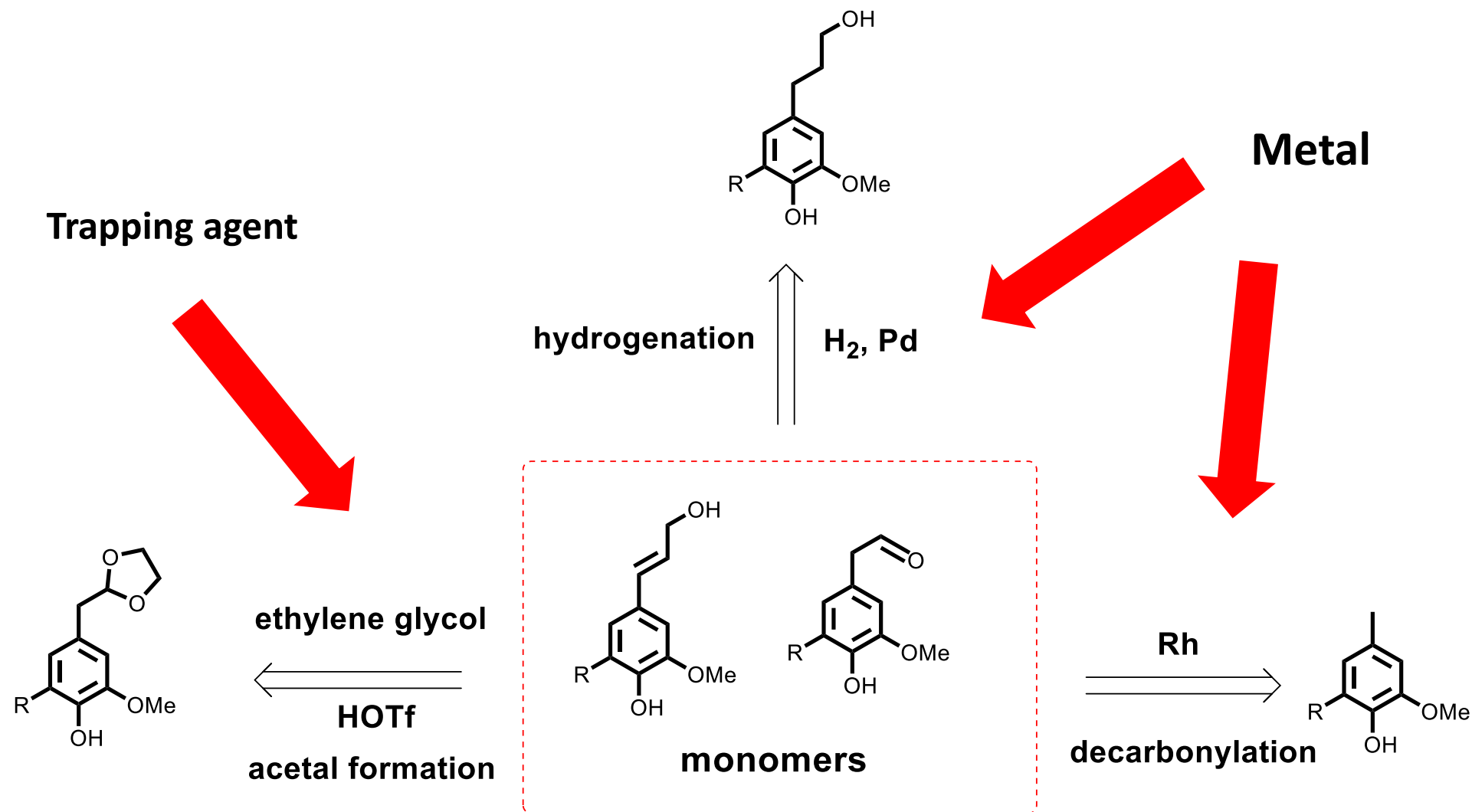


Results

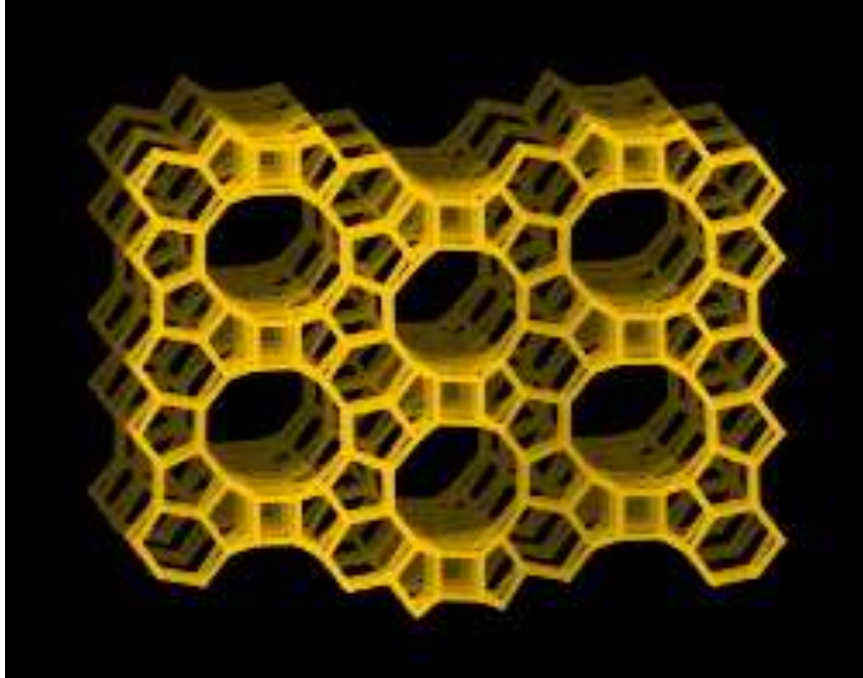


Green Chem. **2017**, *19*, 5767-5771;
Green Chem. **2017**, *19*, 3313-3326

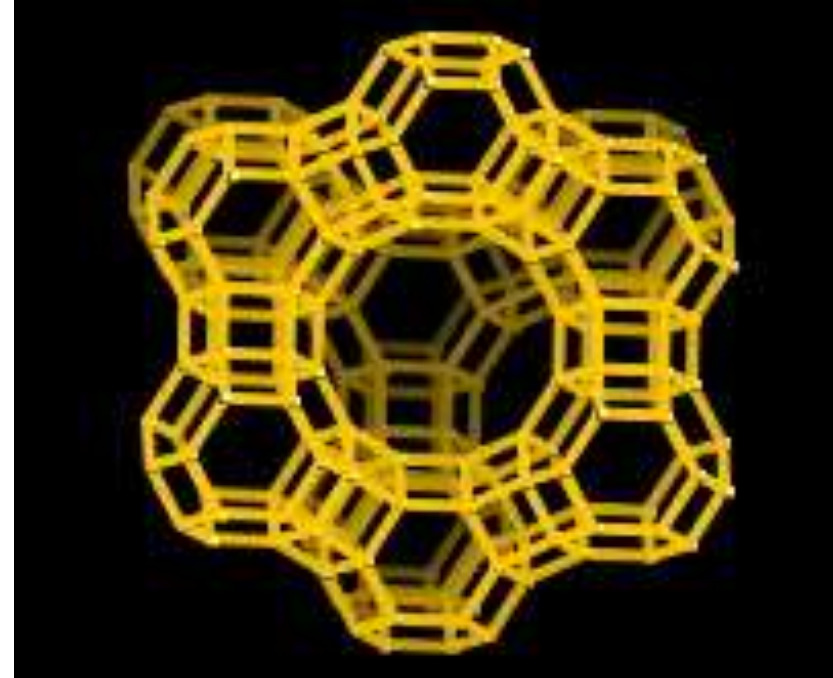
Prevention of recondensation



Results

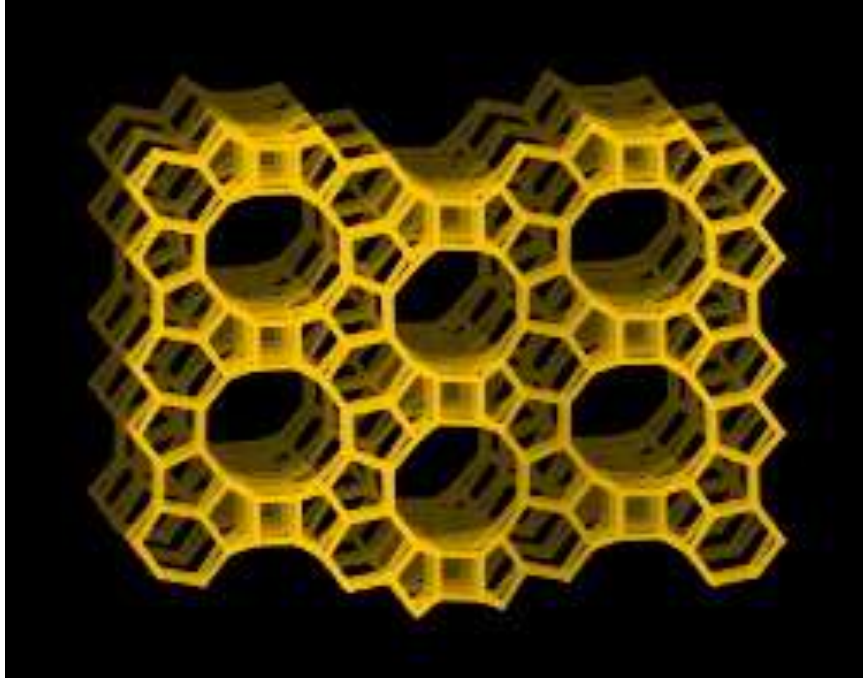


Al- β zeolites
6.68 Å

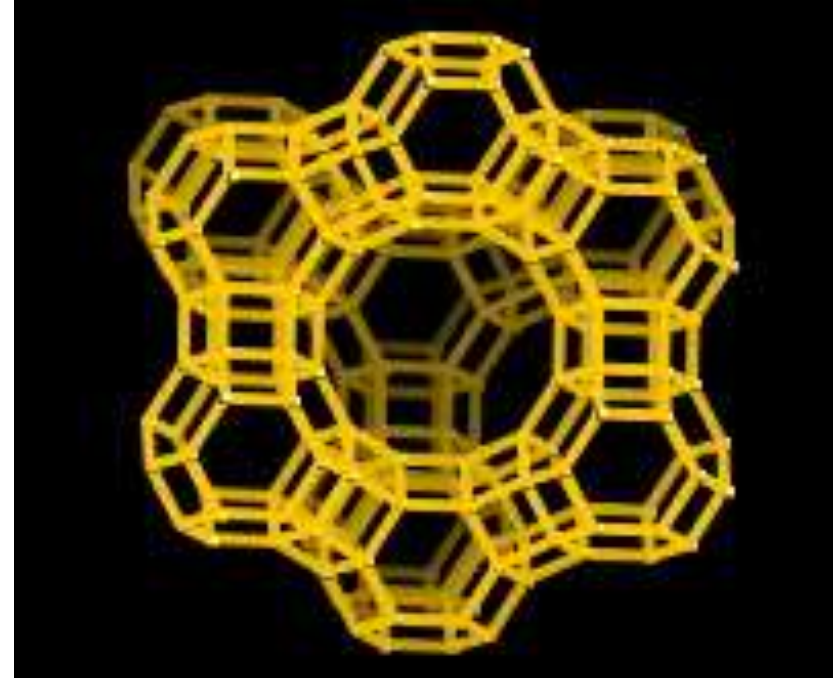


Y-zeolites
11.24 Å

Results

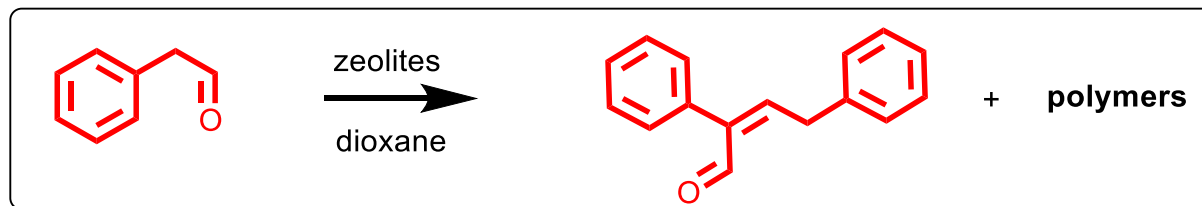


Al- β zeolites
6.68 Å

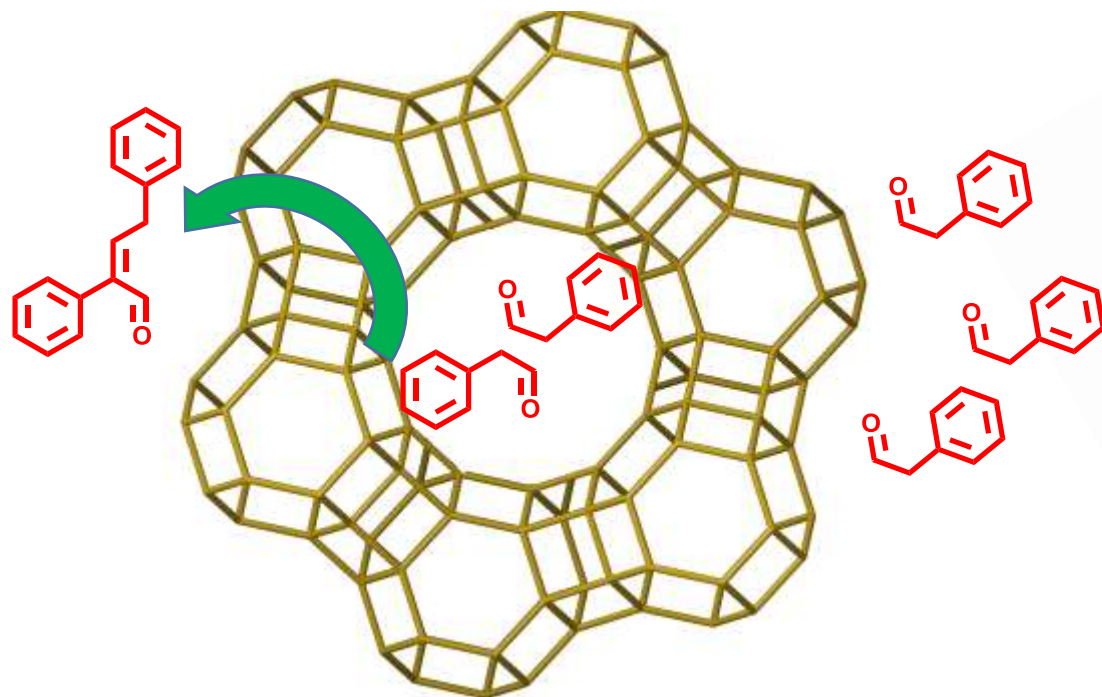


Y-zeolites
11.24 Å

Results



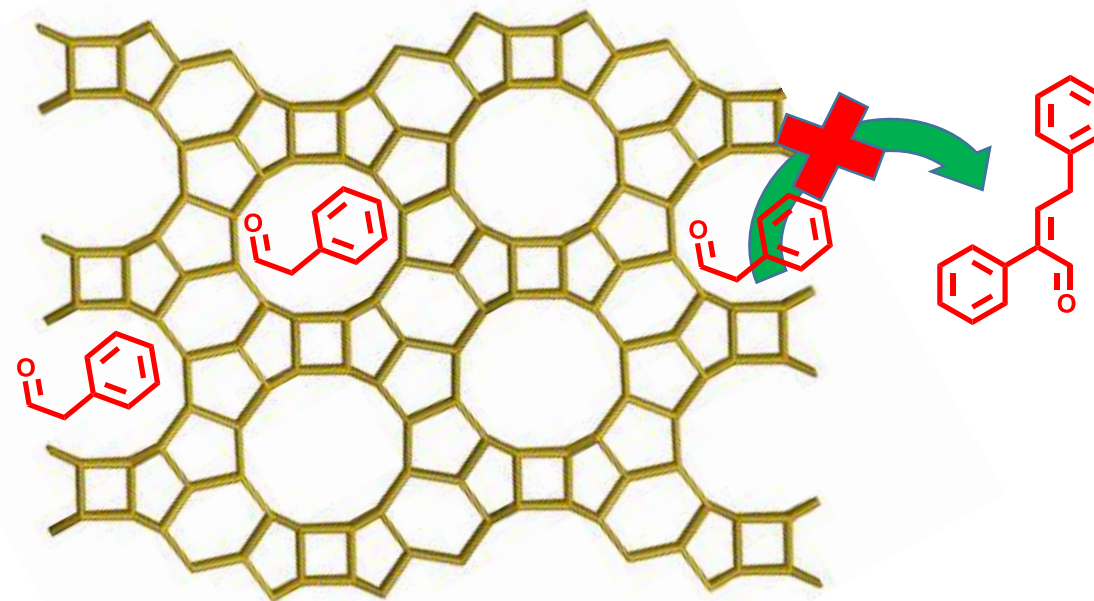
Y - zeolites



recondensation of monomers

conversion 43%

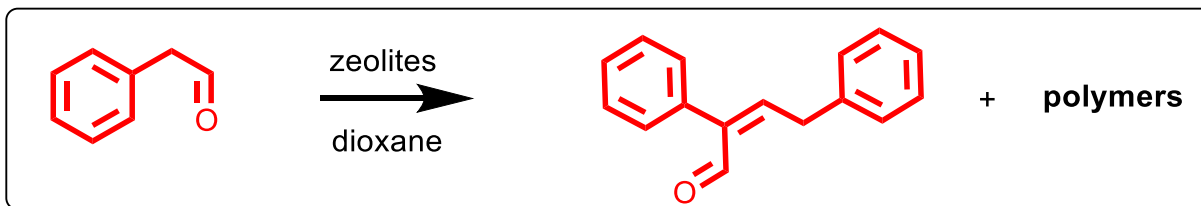
BETA - zeolites



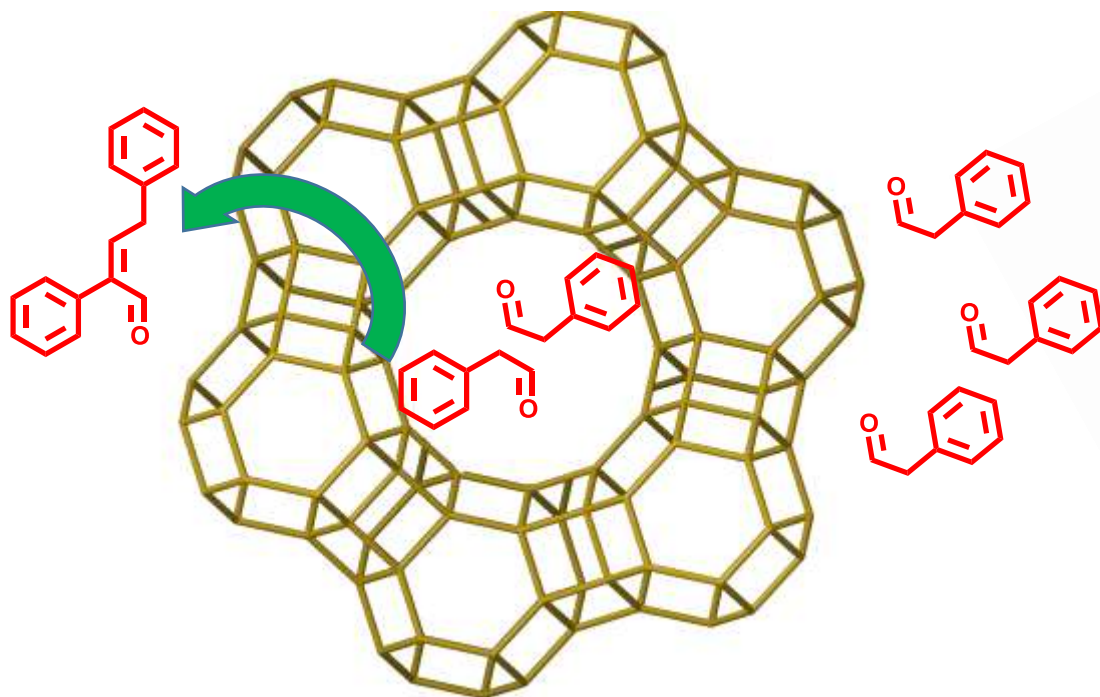
**pore size constrain prevents
recondensation of monomers**

conversion 7%

Results



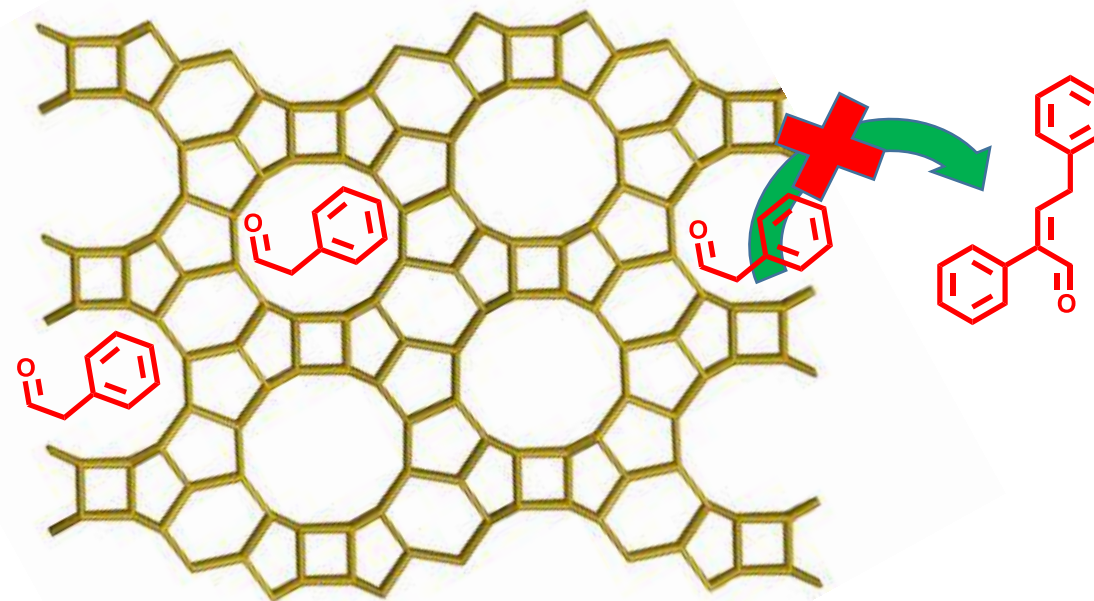
Y - zeolites



recondensation of monomers

conversion 43%

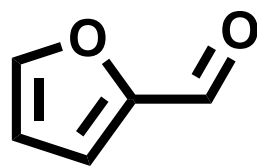
BETA - zeolites



pore size constrain prevents recondensation of monomers

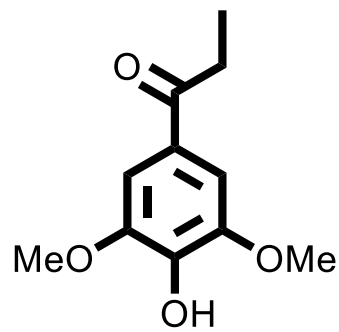
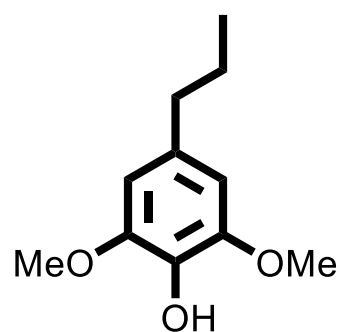
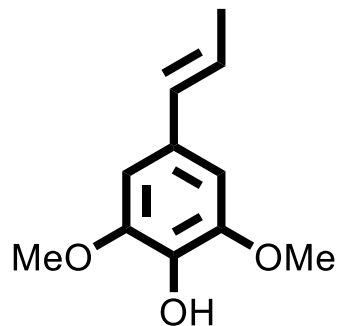
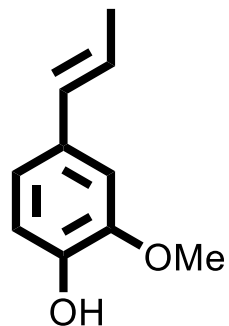
conversion 7%

Results

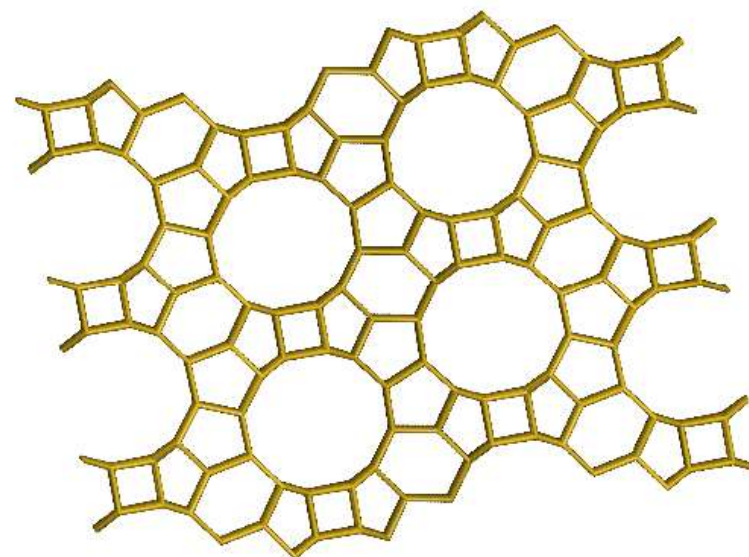


furfural

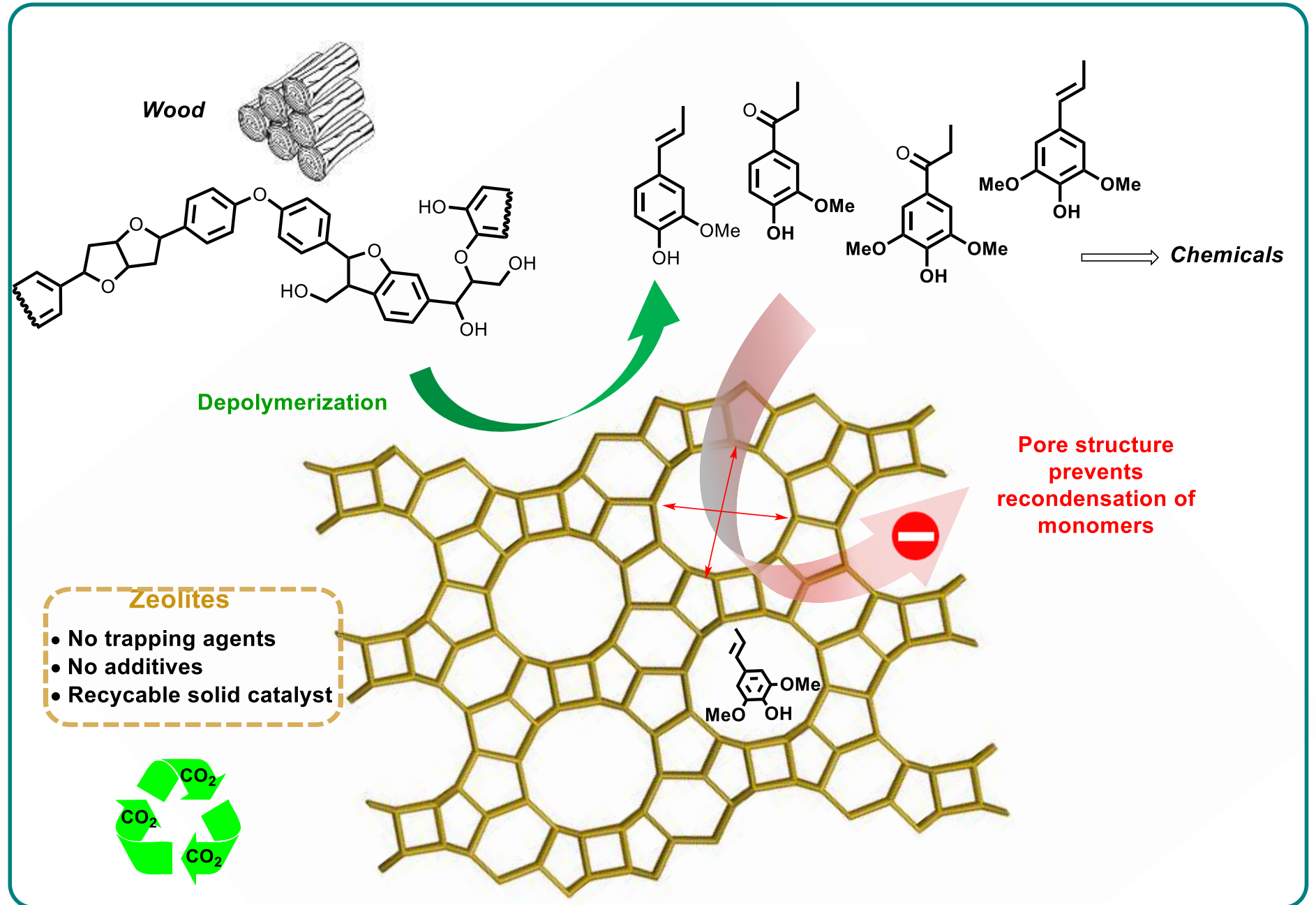
23 mol %



20.5 wt%



Results



Conclusions

- Zeolites with defined structure can be used to transform all components of woody biomass into value-added products
- Lignin undergoes solvolysis and homolytic cleavage to release dimers and monomers, which are stabilized inside the pores of zeolites
- Recondensation of monomers is prevented by structure of the catalyst

Acknowledgements



Prof. Joseph S.M. Samec
Prof. Avelino Corma
Dr. Alexanra Velty