

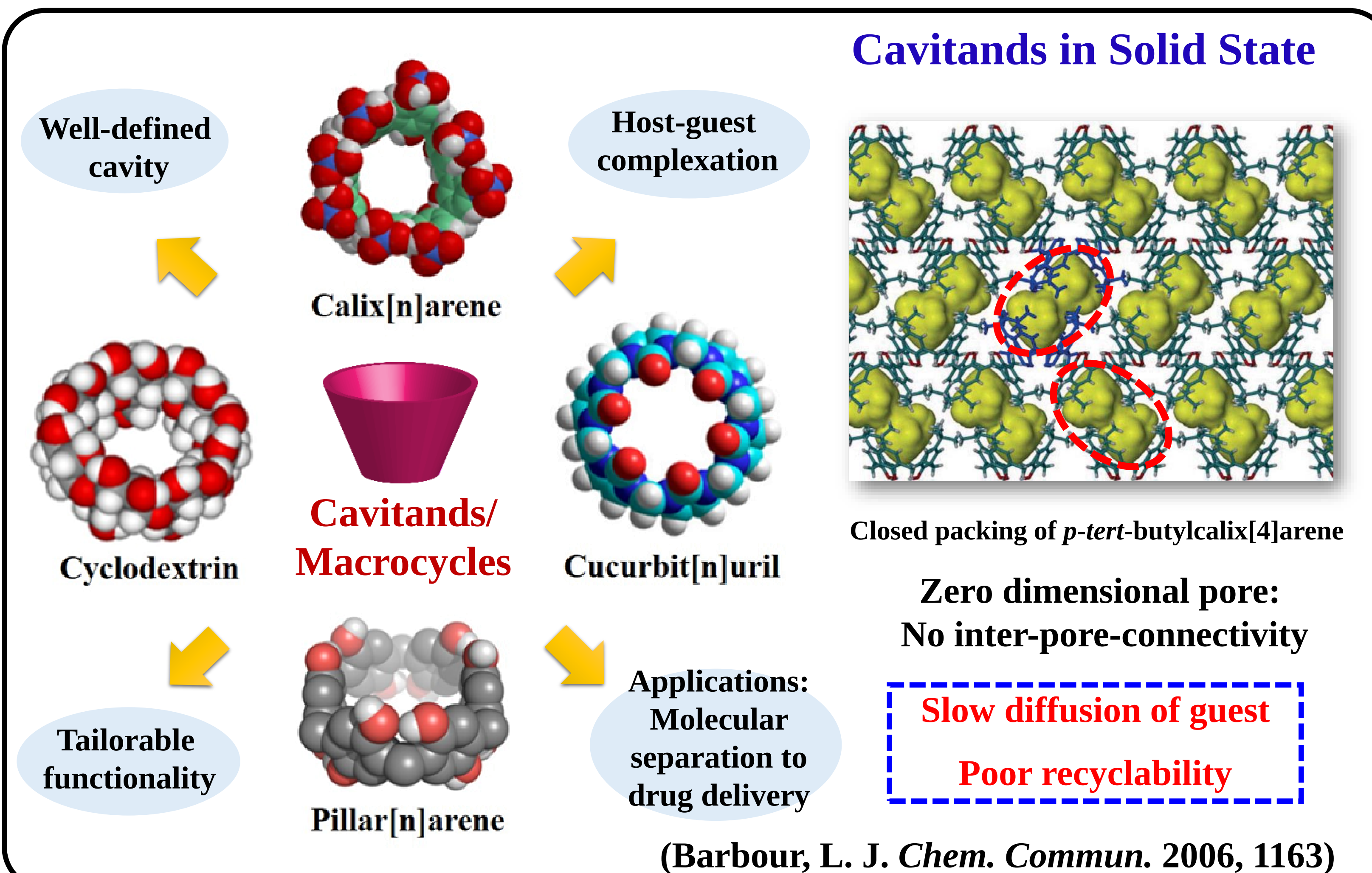
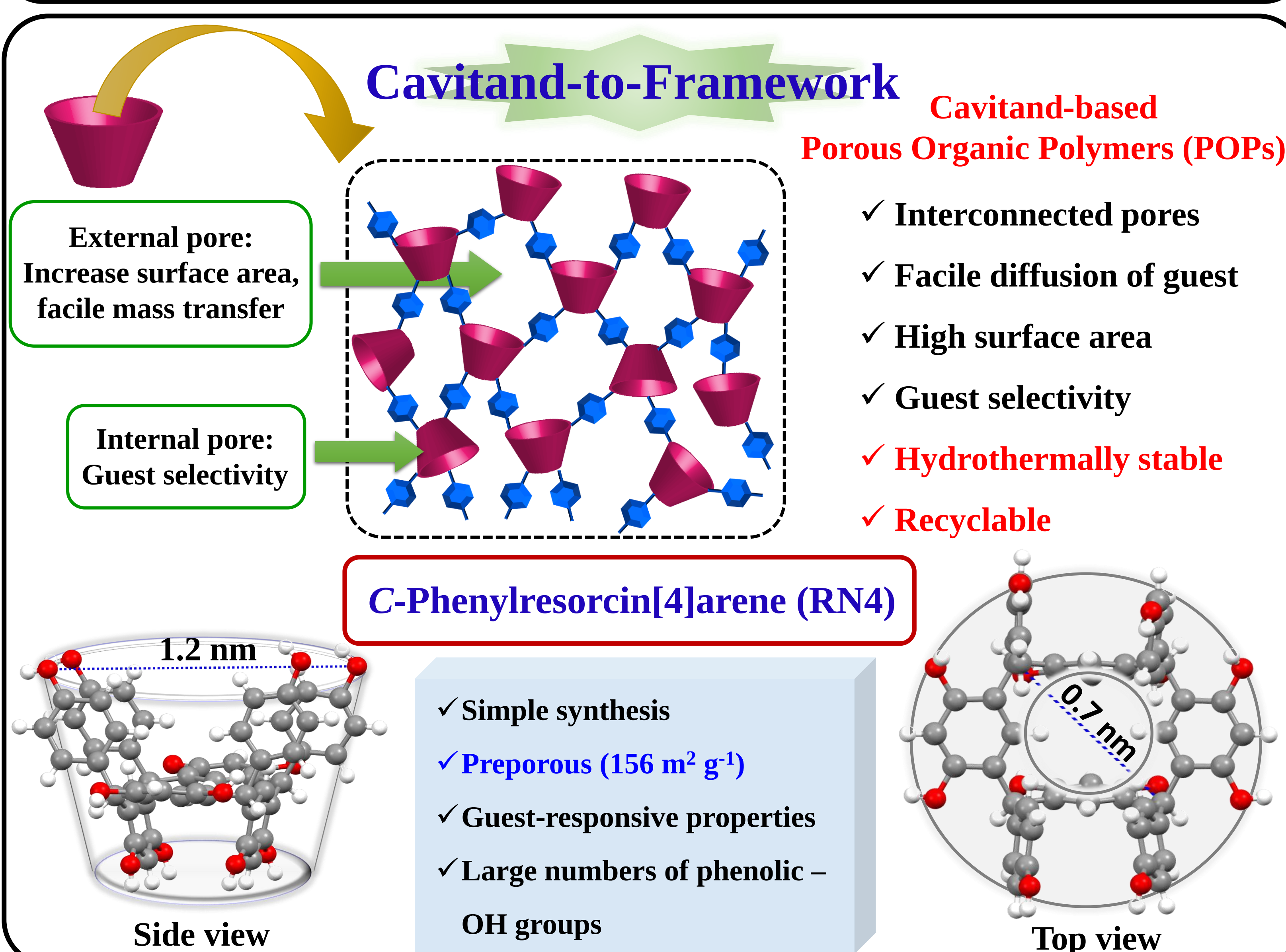
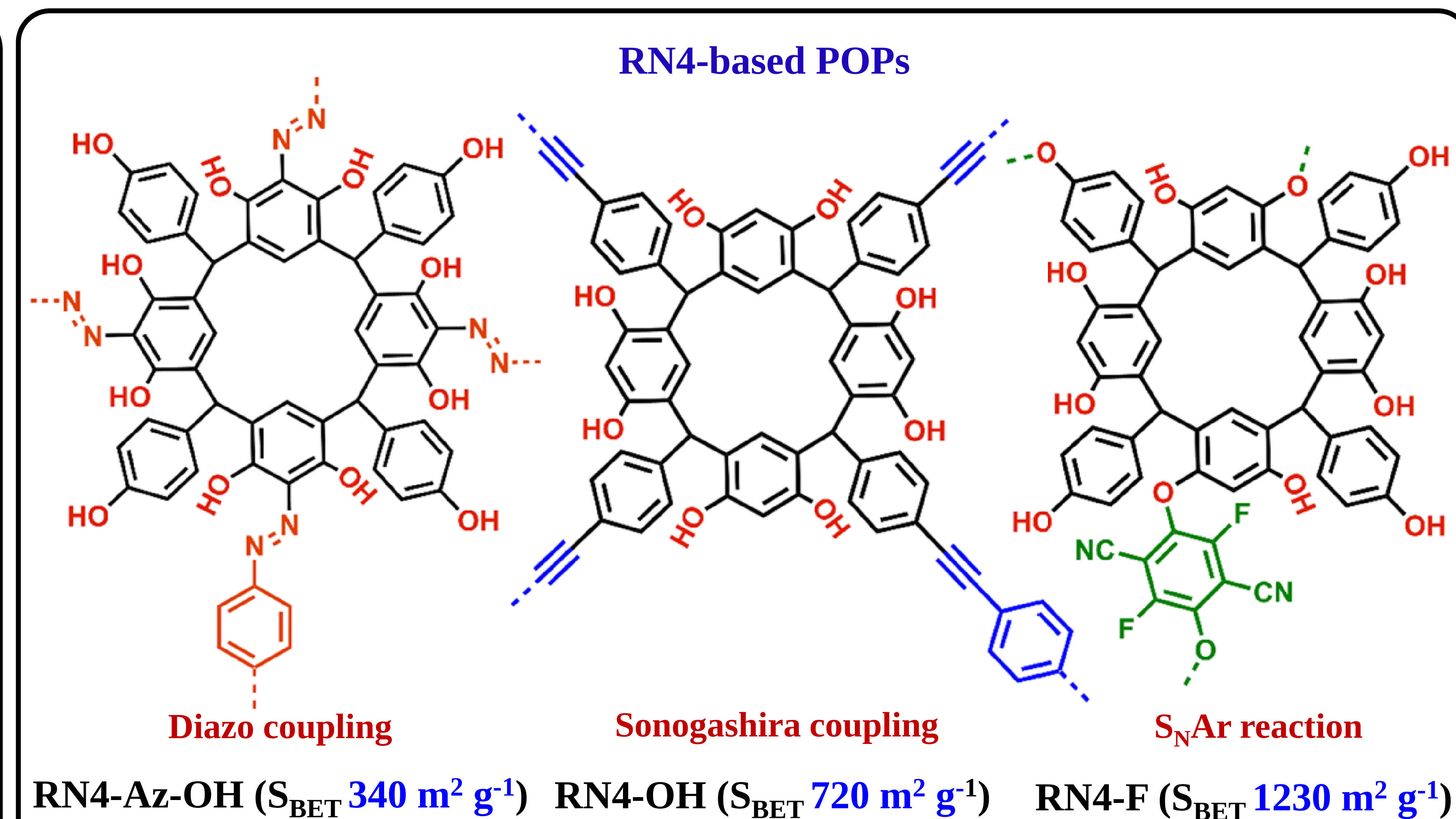
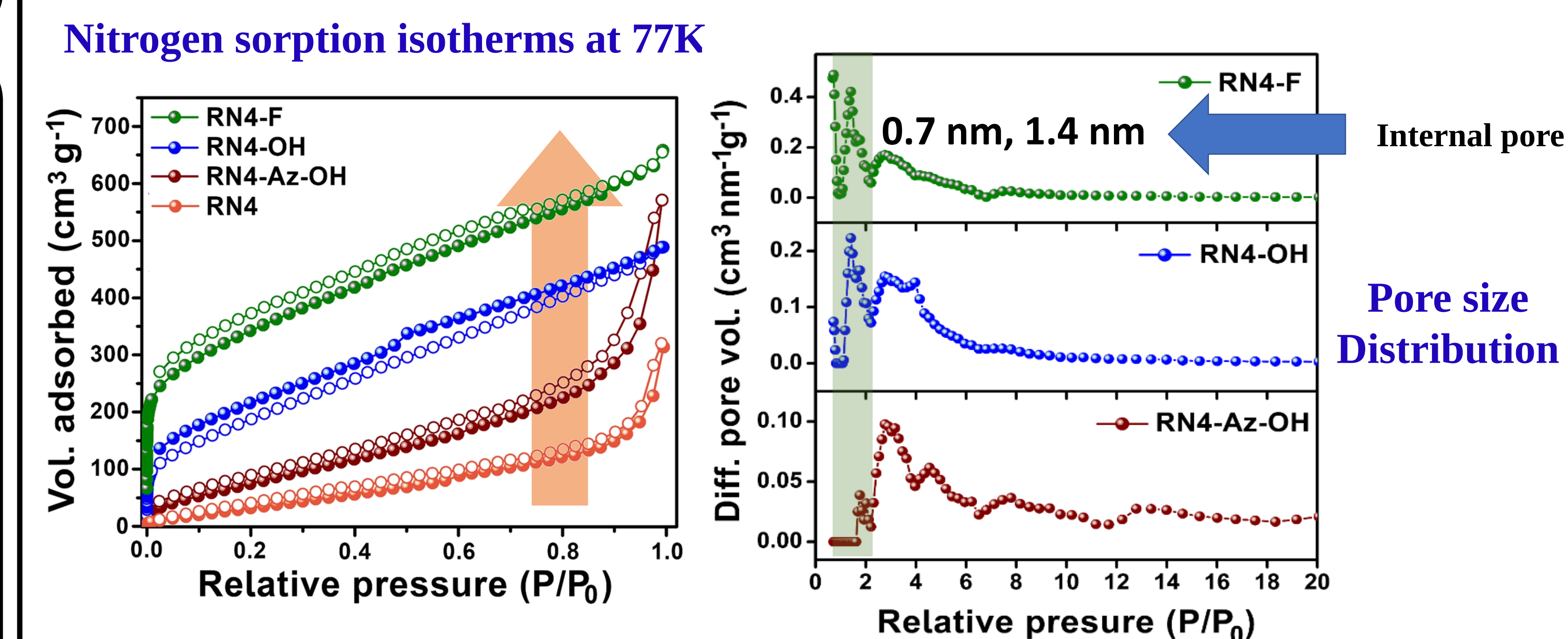


Nanoporous Organic Polymers for Size and Charge Selective Sequestration of Organic Micropollutants from Water

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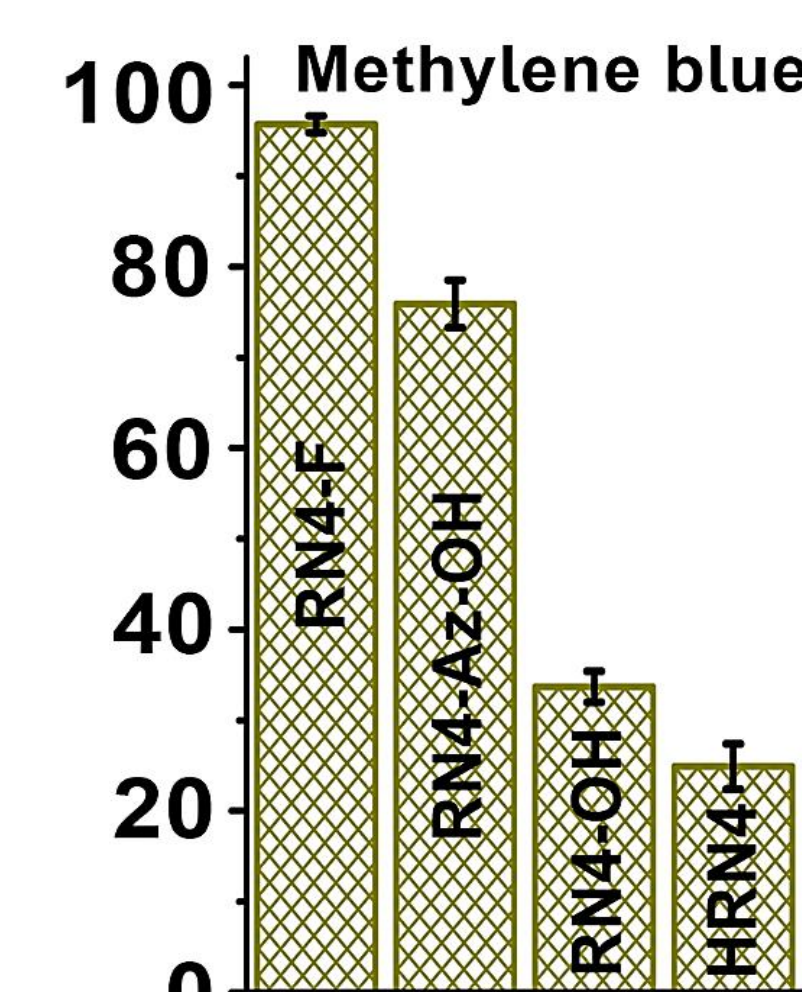
8 fold enhancement in BET surface area

$156 \text{ m}^2 \text{ g}^{-1} \rightarrow 1230 \text{ m}^2 \text{ g}^{-1}$

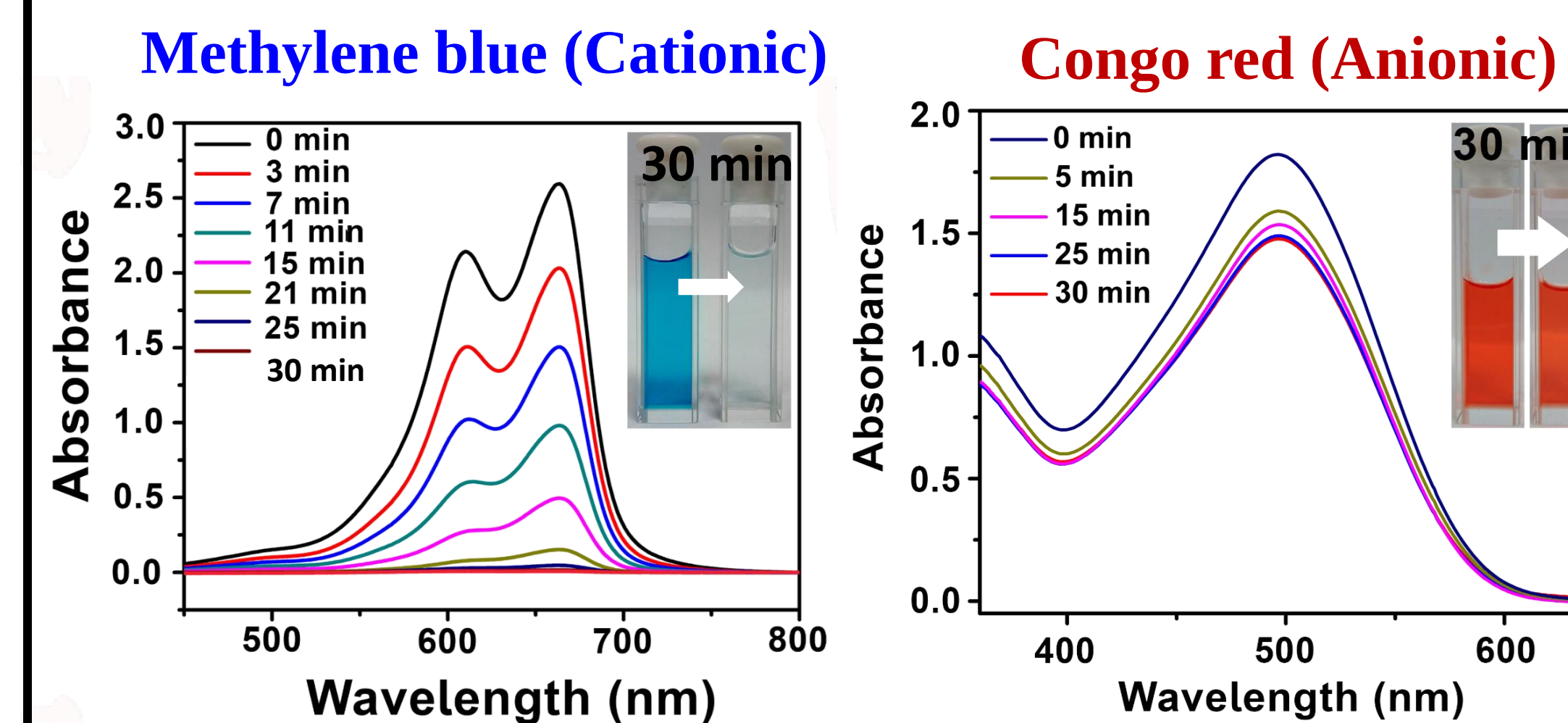
High thermal stability: $250\text{--}350^\circ\text{C}$

High pore volume of RN4-F: $0.95 \text{ cm}^3 \text{ g}^{-1}$

Methylene blue uptake
in 30 min



Charge-specific & size-selective micropollutants removal (RN4-F)

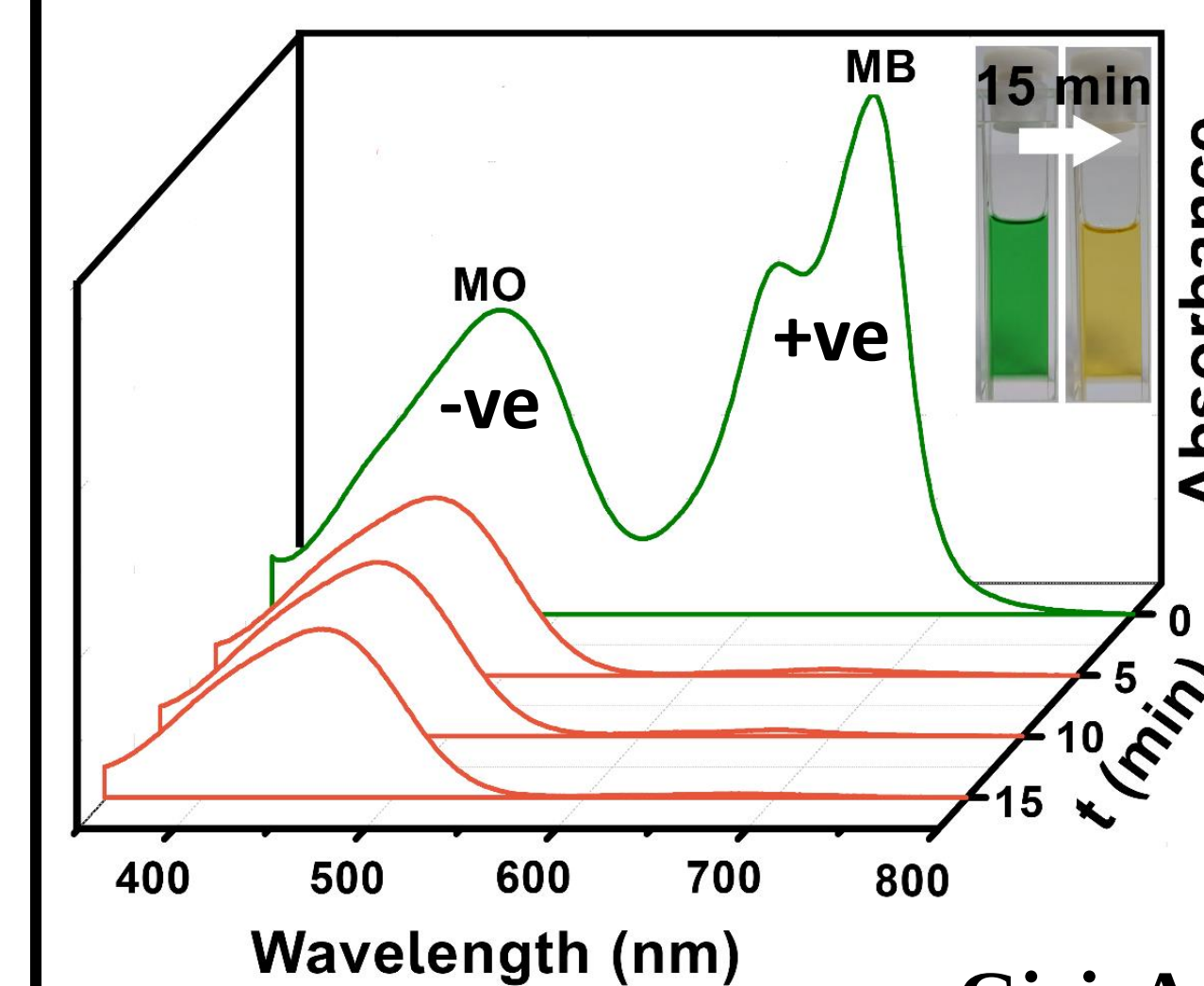
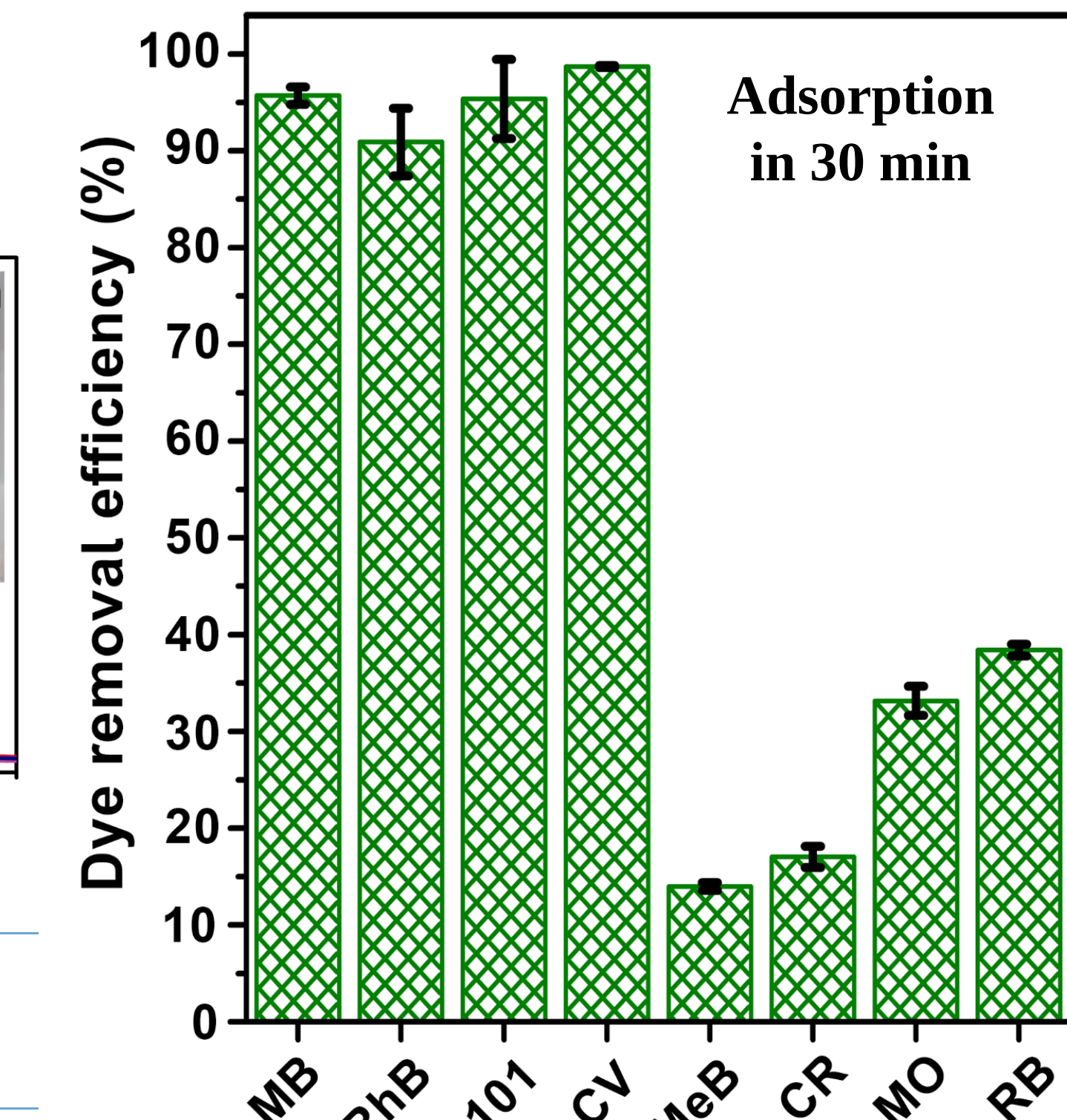


Entry	Size		Charge	% removed
	X (nm)	Y (nm)		
Methylene blue (MB)	1.55	0.73	+1	96
Rhodamine B (RhB)	1.50	1.44	+1	91
Cresyl violet (CV)	1.48	0.83	+1	99
Congo red (CR)	2.74	0.87	-2	17
Methyl blue (MeB)	2.38	1.76	-3	14
Methyl orange (MO)	1.59	0.55	-1	33
p-Nitrophenol	0.79	0.55	0	80
2-Naphthol	0.82	0.62	0	76

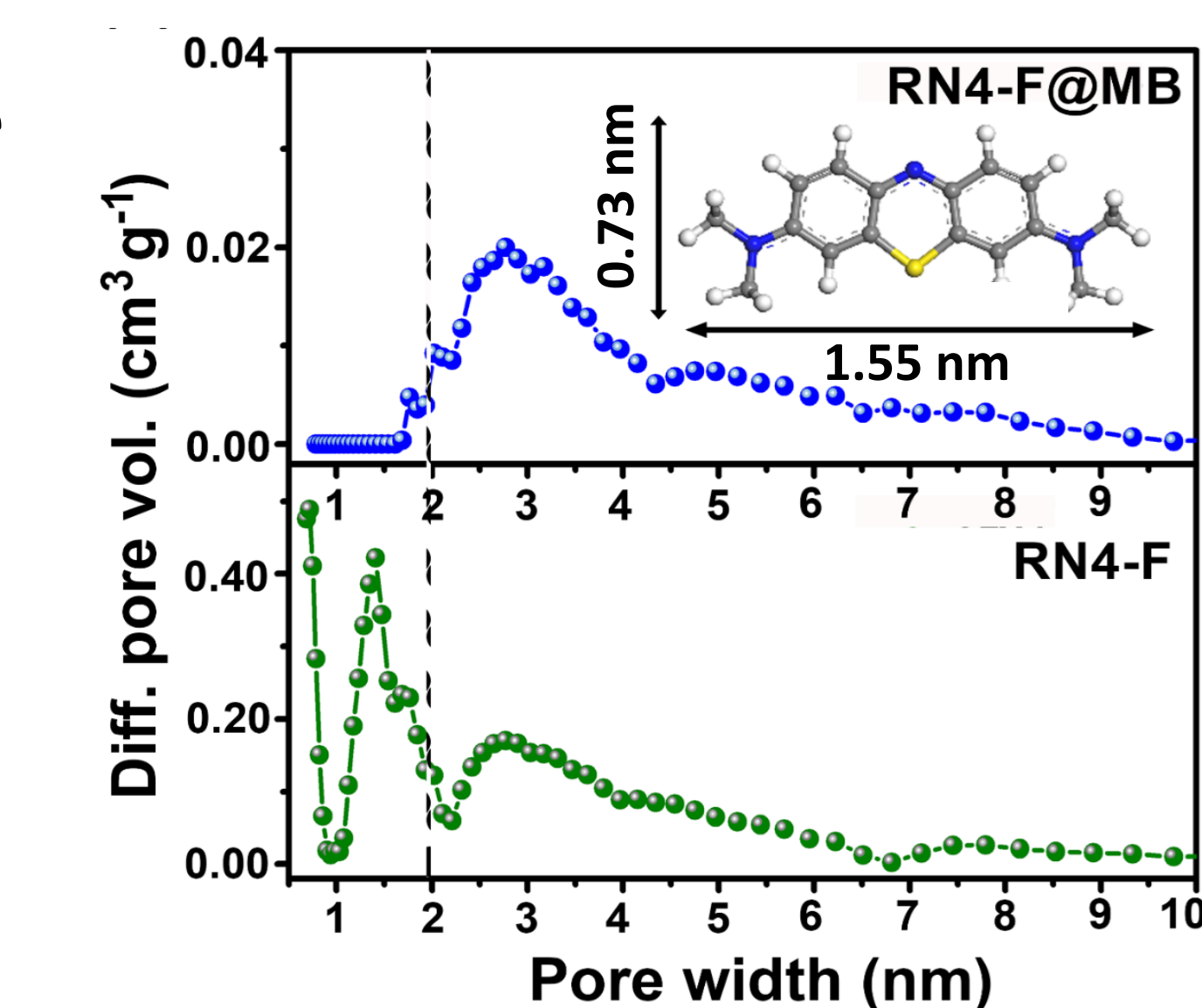
Origin of charge and size selectivity

- Resorcin[4]arene: Cation- π interaction
- Fluorinated linkers: Effective fluorine-cation interaction
- Phenoxide anion: electrostatic interactions

Separation of cationic/anionic dye from mixture



Pore size distribution of RN4-F before & after MB adsorption



Future direction

- ❖ Energy storage, desalination
- ❖ Charge/size-selective separation of chemicals

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