

## EU-12: A Small-Pore, High-Silica Zeolite Containing Sinusoidal Eight-Ring Channels

배주나, 조중연, 이정환, 서성만, 홍석봉<sup>†</sup>

포항공과대학교

(sbhong@postech.ac.kr<sup>†</sup>)

Zeolite EU-12, the framework structure of which has remained unsolved during the past 30 years, is synthesized at a specific  $\text{SiO}_2/\text{Al}_2\text{O}_3$  ratio using choline as an organic structure-directing agent, with both  $\text{Na}^+$  and  $\text{Rb}^+$  ions present. Synchrotron powder X-ray diffraction and Rietveld analyses reveal that the EU-12 structure has a two-dimensional 8-ring channel system. Among the two distinct 8-ring ( $4.6 \times 2.8$  and  $5.0 \times 2.7$  Å) channels along  $c$  axis, the smaller one interconnects with the sinusoidal 8-ring ( $4.8 \times 3.3$  Å) channel along  $a$  axis. The other large one is simply linked up with the sinusoidal channel by sharing 8-rings ( $4.8 \times 2.6$  Å) in the  $ac$  plane. The proton form of EU-12 was found to show a considerably higher ethene selectivity in the low-temperature dehydration of ethanol than H-mordenite, the best catalyst for this reaction.