

## DAFTAR PUSTAKA

- Adoe, D. G. H., Bunganaen, W., Krisnawi, I. F., & Soekwanto, F. A. (2016). *Pirolisis Sampah Plastik PP ( Polypropylene ) menjadi Minyak Pirolisis sebagai Bahan Bakar Primer*. 03(01), 17–26.
- Adsorption, P., & Mas, S. (2016). *Jurnal Teknologi THE USE OF THE COMBINATION OF FTIR , NMR TO DETERMINE THE BRÖNSTED AND*. 6, 223–228.
- Ali, A. (2022). *X-ray Diffraction Techniques for Mineral Characterization : A Review for Engineers of the Fundamentals , Applications , and Research Directions*.
- Aliyu, U. M., Rathilal, S., Mustapha, S. I., Musamali, R., & Tetteh, E. K. (2023). Hydrothermal synthesis of kaolin-based ZSM-5 zeolite: Effect of synthesis parameters and its application for bioethanol conversion. *Catal. Commun.*, 182(August), 106750.
- Bai, Y., Zhang, G., Liu, D., Zhang, Y., Zhao, L., & Gao, J. (2021). Applied Catalysis A , General The advance in catalytic pyrolysis of naphtha technology using ZSM-5 as catalyst. *Appl. Catal. A, Gen.*, 628(July), 118399.
- Barzallo, D., Reinoso, M. A., Miranda, G., Romero, T., Franco, M., & Palmay, P. (2024). *Bifunctional Catalytic Performance of Zn / ZSM-5 in the Aromatization of LPG and the Conversion of Pyrolytic Gases from Recycled Polypropylene*.
- Chen, D., Liu, D., Wei, J., Bai, Y., Zhao, L., Gao, J., & Xu, C. (2023). Applied Catalysis A , General The effect of acid strength on the mechanism of catalytic pyrolysis reaction of n-hexane in ZSM5 : A DFT study. *Appl. Catal. A, Gen.*, 665(August), 119389.
- Connerton, J., Joyner, R. W., & Padley, M. (1995). *Characterisation of the Acidity of Well Defined Cu-ZSM-5 Catalysts using Pyridine as a Probe Molecule*. 91(12), 1841–1844.
- Cruz-Navarro, D. S., Torres-Rodríguez, M., Gutiérrez-Arzaluz, M., Mugica-álvarez, V., & Pergher, S. B. (2022). Comparative Study of Cu/ZSM-5 Catalysts Synthesized by Two Ion-Exchange Methods. *Crystals*, 12(4), 1–9.
- Dyer, A. C., Nahil, M. A., & Williams, P. T. (2022). Biomass : polystyrene co - pyrolysis coupled with metal - modified zeolite catalysis for liquid fuel and chemical production. *J. Mater. Cycles Waste Manag.*, 0123456789.
- He, Q., Akin, O., Ureel, Y., Yazdani, P., Li, L., Varghese, R. J., & Geem, K. M.

- Van. (2024). *Enhancing catalytic pyrolysis of polypropylene using mesopore-modified HZSM-5 catalysts: insights and strategies for improved performance*. September, 1–14.
- Hossain, T., Shahid, A., Mahmud, N., Habib, A., & Rana, M. (2024). Discover Nano Research and application of polypropylene : a review. *Discov. Nano*.
- Hu, J., Jiang, H., Guo, Y., Liu, J., Xu, D., Wu, G., Yi, Y., Zhao, Z., & Guo, H. (2025). Microporous and Mesoporous Materials Efficient synthesis of smaller crystal ZSM-5 zeolite in low TPAOH-to-silica ratio dry-gel hydrothermal system. *Microporous Mesoporous Mater.*, 390(December 2024), 113596.
- Katalis, K., Dan, Z. R., & Regenerasi, T. (2013). *KARAKTERISASI KATALIS ZEOLIT-Ni REGENERASI DAN TANPA REGENERASI DALAM REAKSI PERENKAHAN KATALITIK* 1. 2(1), 24–29.
- Luca, S. De, & Al, S. (2023). *Zeolites as Acid / Basic Solid Catalysts: Recent Synthetic Developments framework*.
- Miandad, R., Barakat, M. A., Aburiazaiza, A. S., Rehan, M., & Nizami, A. S. (2016). Catalytic pyrolysis of plastic waste : A review. *Process Saf. Environ. Prot.*, 102, 822–838.
- Miandad, R., Rehan, M., Barakat, M. A., & Aburiazaiza, A. S. (2019). *Catalytic Pyrolysis of Plastic Waste : Moving Toward Pyrolysis Based Biorefineries*. 7(March), 1–17.
- Mohd-setapar, S. H., Irwan, M., & Thahir, R. (2024). *Purification of Used Engine Oil by Pyrolysis – Adsorption Method Assisted Coal Activated Carbon*. 11(1), 26–30.
- Nugroho, K. A. (2017). Pemanfaatan Zeolit ZSM-5 dalam Proses Peningkatan Mutu Kualitas Air. *Dep. Chem.*, 1(1), 1–6.
- Options, P. (n.d.). *Global Plastics Outlook*.
- Palc, A., Lukman, M. F., Wach, A., Bertmer, M., Jablon, M., Poppitz, D., Denecke, R., Wu, X., Simon, U., Andreas, P., & Gl, R. (2023). *OSDA-Free Seeded Cu-Containing ZSM - 5 Applied for NH 3 – SCR-*. 0–12.
- Papuga, S., Djurdjevic, M., Ciccioli, A., & Cipriotti, S. V. (2023). *SS symmetry Catalytic Pyrolysis of Plastic Waste and Molecular Symmetry Effects : A Review*.
- Peng, Y., Wang, Y., Ke, L., Dai, L., Wu, Q., Cobb, K., Zeng, Y., Zou, R., Liu, Y., & Ruan, R. (2022). A review on catalytic pyrolysis of plastic wastes to high-

- value products. *Energy Convers. Manag.*, 254(October 2021), 115243.
- Pengajar, S., & Semarang, A. (2005). *SIFAT DAN KARAKTERISTIK MATERIAL PLASTIK DAN BAHAN ADITIF Iman Mujiarto \*) Abstrak*. 3(2).
- Selpiana, S., Yunita, R. R., Ningsih, B., Putri, R. W., & Daffa, M. (2021). *SINTESIS BAHAN BAKAR PADAT BERBAHAN BAKU RESIDU ( CHAR ) HASIL PIROLISIS LIMBAH PLASTIK*.
- Studi, P., Industri, T., Teknik, F., & Darma, U. B. (2019). *Metode Pyrolysis Upaya Untuk Mengkonversi Limbah Plastik Menjadi Bahan Bakar Cair Alternatif Pyrolysis Method to Convert Plastik Waste into Alternative Liquid Fuels*. 4, 9–16.
- Tampubolon, A. J., Gamayel, A., & Zaenudin, M. (2024). *The Effect of ZSM-5 Zeolite and Dolomite Catalysts on the Performance of Plastic Waste Pyrolysis*. 02(02), 67–71.
- Tao, A., Zhang, X., Chen, Z., Guan, H., Gu, X., Lei, J., Xiong, Q., Obozokhai, B., & Cui, H. (2026). Journal of Analytical and Applied Pyrolysis Co-production of light olefins and aromatics with high PX selectivity from catalytic pyrolysis of polypropylene over shaped ZSM-5 microspheres. *J. Anal. Appl. Pyrolysis*, 193(P3), 107419.
- Thahir, R., Irwan, M., Alwathan, A., & Ramli, R. (2021). Results in Engineering Effect of temperature on the pyrolysis of plastic waste using zeolite ZSM-5 using a refinery distillation bubble cap plate column. *Results Eng.*, 11(April), 100231.
- Tong, S., Xu, Y., Hong, L., Sun, C., Ai, L., & Chen, J. (2025). International Journal of Hydrogen Energy Study on pore structure of iron phase in magnetite pellets reduced by pure hydrogen based on nitrogen adsorption method. *Int. J. Hydrogen Energy*, 114(March), 186–193.
- Wang, J. (2019). *a steam-assisted method and their application in methanol to aromatic reactions*. 28451–28459.
- Xie, H., Xu, W., Ran, S., Li, X., Li, B., Li, Y., & Wang, L. (2022). Microporous and Mesoporous Materials Combining solid state grinding and steam-assisted crystallization for green organotemplate-free synthesis of ZSM-5. *Microporous Mesoporous Mater.*, 345(September), 112238.
- Yashnik, S. A., Surovtsova, T. A., & Salnikov, A. V. (2024). Cu-ZSM-5 catalyst synthesis via ion-exchange with ammonia solution of copper hydroxysalts. *Microporous Mesoporous Mater.*, 367(October 2023), 112966.

Zhang, M., Huang, J., Meng, F., & Zhang, C. (2025). *Coke-induced deactivation in zeolite catalysts* : 17383–17399.