

**DAFTAR PUSTAKA**

- Abidin, A.Z., Puspasari, T., & Nugroho, W.A. (2012). Polymers for enhanced oil recovery technology. *Procedia Chemistry*, 4, 11-16.
- Ali, J.A., Kolo, K., Manshad, A.K., Mohammadi, A.H. (2018). Recent advances in application of nanotechnology in chemical enhanced oil recovery: Effect of nanoparticles on wettability alteration, interfacial tension reduction, and flooding. *Egyptian Journal of Petroleum*, 27, 1371-1383.
- Alomair, O.A., et al. (2015). Experimental study of enhanced-heavy-oil-recovery in Berea *sandstone* core by using nanofluids applications. *SPE Reservoir Evaluation & Engineering*, 18, 387-399.
- Amirmoshiri, M., Zhang, L., Puerto, M., et al. (2020). Role of wettability on the adsorption of an anionic surfactant on *sandstone* cores. *Langmuir*, 36(36), 10725-10738.
- Anggara, T.A., Azis, M.M., Purwono, S., (2019). Studi Injeksi Surfaktan Sodium Lignosulfonat (SLS) pada Media *Sandstone* dan *Limestone* dalam Rangka Enhanced Oil Recovery (EOR). *Jurnal Pengembangan Teknologi Kimia untuk Pengolahan Sumber Daya Alam Indonesia*
- Anindia, I., Azis, M.M., Purwono, S. (2017). Pembuatan Sodium Lignosulfonate dari Black Liquor serta pengaruh komposisi mix surfaktan (SLS, PFDA, dan Oktanol) yang memberikan nilai IFT 10^{-3} . Skripsi Departemen Teknik Kimia, Fakultas Teknik, Universitas Gadjah Mada, Yogyakarta.
- Ardelina, D., Purwono, S., & Azis M.M. (2021). Pengaruh Penambahan silika nanopartikel (SNP) pada proses adsorpsi surfaktan sodium lignosulfonate (SLS). Universitas Gadjah Mada.
- Ariska, C. R., Purwono, S. and Murachman, B. (2011). Modifikasi SLS dengan Epoksida dari Asam oleat dan Hidrogen Peroksida untuk Meningkatkan Kualitas Surfaktan pada EOR, *Jurnal Teknik Kimia Indonesia*, 10(3), 141–148.
- Ariyanti, D.S. (2017). Penyebab Produksi Minyak Mentah Nasional Diproyeksi Tak Mencapai Target. <https://ekonomi.bisnis.com/read/20171006/44/696563/4-penyebab-produksi-minyak-mentah-nasional-diproyeksi-tak-capai-target>. (Diakses pada tanggal 10 Oktober 2021)
- Azis, M.M., Febrina, F., Anindia, I., Darmawati, A. G., Fenyka, D. A., Purwono, S., and Rochmadi. (2021). Development of Ultralow Interfacial Tension Lignosulfonate from Kraft Black Liquor for Enhanced Oil Recovery, *ITB Journal Publisher*, 53(2): 1-15. <https://www.10.5614/j.eng.technol.sci.2021.53.2.10>. Diakses pada tanggal 10 Oktober 2021.
- Belhaj, A.F. et al. (2020). The effect of surfactant concentration, salinity, temperature, and pH on surfactant adsorption for chemical enhanced oil recovery: A review. *Exploration Engineering*, 10, 125-137.
- Bera, A., Belhaj, H. (2016). Application of nanotechnology by means of nanoparticles and nanodispersions in oil recovery- A comprehensive review. *Journal of Natural Gas Science and Engineering*, 34, 1284-1309.
- Berger, L.(2002). Ultra low concentration surfactant for *sandstone* and *limestone* floods. *Society Petroleum Engineering*.
- Broto, W. (2010). Produksi surfaktan glukosa ester dari beras dan berbagai asam lemak: Kajian rantai panjang karbon terhadap kestabilan emulsi. Universitas Diponegoro.



- Pengaruh Penambahan Silica Nanoparticle dan Surfaktan SLS (Sodium Lignosulfonate) terhadap Recovery Factor pada Proses Enhanced Oil Recovery
Destias Selly Handayani, Prof. Ir. Suryo Purwono, M.A.Sc., Ph.D., IPU., ASEAN. Eng., ACPE; Ahmad Tawfiequrrahman
Universitas Gadjah Mada, 2023 | Diunduh dari <http://etd.repository.ugm.ac.id/>
- Fitriani., Purwono, S., & Tawfiquurrahman, A., (2017), Pengaruh Epoksidasi Minyak Biji Nyamplung (*calophylluminophyllum L*) dan Kosurfaktan Terhadap Kinerja Sodium Lignosulfonat (SLS) Untuk Enhanced Oil Recovery (EOR). Jurnal Inovasi Teknik Kimia, 2(1), 9-14.
- Gogoi, S.B. (2011). Adsorption-Desorption of Surfactant for Enhanced Oil Recovery. *Transport in Porous Media*, 90, 589-604.
- Hendraningrat, L., Li, S., Torsæter, O. (2013). A core investigation of nanofluids enhanced oil recovery. *Journal of Petroleum Science and Engineering*, 111, 128-138.
- Hermiza, M. F. (2022). Uji laboratorium pemilihan surfaktan polimer tahap EOR untuk meningkatkan perolehan minyak Lapangan X. Universitas Islam Riau, Pekanbaru.
- Irwan, S. A. (2014). Pendesakan Minyak Bumi dari Batuan reservoir dengan menggunakan larutan sodium lignosulfonate termodifikasi. Skripsi laporan penelitian Laboratorium Teknologi Minyak Bumi, Gas dan Batu Bara, Departement Teknik Kimia, Universitas Gadjah Mada, Yogyakarta.
- Ianova, A.A. et al. (2020). Effect of Nanoparticle on Viscosity and Interfacial Tension of Aquoes Surfactant Solution at High Salinity and High Temperature. *Journal of Surfactant and Detergents*, 23(2), 327-338. <https://doi.org/10.1002/jsde.12371>. Diakses Pada Tanggal 16 November 2021
- Jiang, R. et al. (2016). Interfacial Study on The Interaction between Hydrophobic Nanoparticles and Ionic Surfactant. *Journal of Colloid and Surface A*, 488, 20-27.
- Juita, R., Arnelli, & Yusniati, (2016), Telaah Surfaktan untuk Proses Enhanced Oil Recovery (EOR) dan Profil Adsorpsi Surfaktan A-Olefin Sulfonate (AOS). *Jurnal Kimia Sains dan Aplikasi*, 19(1), 27-31. <https://doi.org/10.1007/s11242-011-9805-y>. Diakses Pada Tanggal 16 November 2021
- Langmuir, I. (1917). The Constitution and Fundamental Properties Of Solids And Liquids. *Journal of the Franklin Institute*, 184(5), 721. [https://doi.org/10.1016/s0016-0032\(17\)90088-2](https://doi.org/10.1016/s0016-0032(17)90088-2). Diakses Pada Tanggal 15 November 2021
- Lashari, N., Ganat, T., Elraies, K. (2022). Impact of Nanoparticles stability on rheology, interfacial tension, and wettability in chemical enhanced oil recovery: A critical parametric. *Journal of Petroleum Science and Engineering*, 212. <https://doi.org/10.1016/j.petrol.2022.110199>.
- Li, S. et al. (2013). Effect Of Silica Nano Particles Adsorption On The Wettability Index Of Sandstone. Paper SCA2013-059 presented at the international symposium of the society of core analysis held in Napa Valley, California, USA (pp. 16-19).
- Li, S. et al. (2019). The impact of Nanoparticles Adsorption on Transport and Wettability Alteration in Water-wet Berea Sandstone: An Experimental Study. *Frontiers in Physics* Vol. 7. <https://doi.org/10.3389/fphy.2019.00074>.
- Myers, D. (2020). *Surfactant science and technology* (4th ed.). Cordoba, Argentina: Wiley.
- Niu, J. et al. (2020). Review On Microbial Enhanced Oil Recovery: Mechanisms, Modeling And Field Trials, *Journal of Petroleum Science and Engineering*. Elsevier B.V, pp.192.
- Novianti, Y. (2020). Jenis dan Karakteristik pada Batuan Sandstone (Batu Kapur). Portal Universitas Sebelas Maret. <https://spada.uns.ac.id/mod/forum/discuss.php?d=33580>. Diakses Pada Tanggal 17 Oktober 2021
- Nur Caya, D. (2020). Kajian Pustaka pengaruh penambahan surfaktan dan kosurfaktan terhadap karakteristik sediaan mikroemulsi. Prosiding Farmasi. 17(2).



- Pengaruh Penambahan Silica Nanoparticle dan Surfaktan SLS (Sodium Lignosulfonate) terhadap Recovery Factor pada Proses Enhanced Oil Recovery**
Destias Selly Handayani, Prof. Ir. Suryo Purwono, M.A.Sc., Ph.D., IPU., ASEAN. Eng., ACPE; Ahmad Tawfiequrrahman
Universitas Gadjah Mada, 2023 | Diunduh dari <http://etd.repository.ugm.ac.id/>
- Nur Fatwa, D. (2014). Pembuatan Sodium Lignosulfonat (SLS) dari Isolat Lignin Tandan Kosong Kelapa Sawit (TKKS) dengan katalis NaOH pada Proses Sulfonasi. Universitas Gadjah Mada, Yogyakarta.
- Prakoso, N.I., Purwono, S., & Rochmadi. (2017, March 17). *Synthesis of sodium lignosulphonate from oil palm empty fruit bunches's lignin*. AIP Conference Proceeding. <https://doi.org/10.1063/1.4978110>
- Prakoso, N.I., Purwono, S., & Rochmadi. (2016). Study on lignin isolation from oil palm empty fruit bunches. *Eksakta: Jurnal Ilmu MIPA* ISSN: 1411-1047.
- Priyanto, S. et al. (2018). Synthesis study of surfactant sodium lignosulfonate (SLS) from biomass waste using Fourier Transform Infra Red (FTIR). MATEC web of Conference. <https://doi.org/10.1051/matecconf/201815603030>.
- Putri, N.A., Azis, M.M., Purwono, S. (2019). A comparison of Sodium Lignosulfonate (SLS) synthesis from black liquor lignin and commercial lignin. Material Science Forum, Switzerland, 948, 206-211.
- Saxena, N., Kumar, A., Mandal, A. (2018). Adsorption analysis of natural anionic surfactant for enhanced oil recovery: The role of mineralogy, salinity, alkalinity and nanoparticles. Journal of Petroleum Science and Engineering Vol. 18. <https://doi.org/10.1016/j.petrol.2018.11.002>.
- Sharma, T. et al. (2016). Silica nanofluids in an Oilfield Polymer Polyacrylamide: Interfacial Properties, Wettability Alteration, and Application for Chemical Enhanced Oil Recovery. *Journal of Industrial and Engineering Chemist Research*, 55(48), pp 12387-12397.
- Sheng, J. J. (2011). Surfactant Flooding, Modern Chemical Enhanced Oil Recovery. *Journal of Petroleum Science*. University of Petroleum, Beijing, 17(22), 419-433.
- Sudibjo, R. (2015). Penelitian dalam Penerapan EOR di Indonesia. Universitas Trisakti, Jakarta
- Sugeng, S.S. (2016). Characteristic of Sandstone and Reservoir Potensial of Ngrayong Formation in Tuban and Madura Areas, North East Java Basin, Indonesia. Disertasi S3 Teknik Geologi Universitas Gadjah Mada. Diakses pada tanggal 08 November 2021.
- Sugihardjo & Eni, H. (2014). Substitution of Petroleum Base with MES base Surfactant for EOR: Laboratory Screening. *Journal of Contribution Oil & Gas*, 37(1), 35-44.
- Suresh, R. et al. (2018). Reduction Of Surfactant Adsorption In Porous Media Using Silica Nanoparticles. *Proceeding of the Annual Offshore Technology Conference*, vol. 2, pp. 984-992. Diakses pada Tanggal 10 November 2021
- Wu, Y., Chen, W., Dai, C. (2017). Reducing Surfactant Adsorption on Rock by Silica Nanoparticles for Enhanced Oil Recovery. *Journal of Petroleum Science and Engineering*, Vol. 153, pp. 283-287.
- Yuan, C., Pu, W., Wang, X., et al. (2015). Effect of interfacial tension emulsification and surfactant concentration on oil recovery in surfactant flooding process for high temperature and high salinity reservoir. *Energy Fuel*, 29(10), 6165-6176.
- Zargartalebi, M., Kharrat, R., Barati, N. (2015). Enhancement of surfactant flooding performance by the use of silica nanoparticles. *Fuel*. 143, 21-27.
- Zhang, H., Nikolov, A., & Wasan, D. (2014). Enhanced Oil Recovery (EOR) using nanoparticle dispersion: Underlaying mechanism and imhibition experiment, *Energy and Fuels*, vol.28, No.5, pp.3002-3009
- Zulkifli, N. N., et al. (2020). Evaluation Of New Surfactant For Enhanced Oil Recovery Application In High Temperature Reservoir, *Journal of Petroleum Exploration and Production Technology*. Springer International Publishing, vol. 10, No. 2, pp. 283-296.