

BAB 6.

PENUTUP

1 Dari hasil analisis sifat mekanik diperoleh dengan penambahan nano ASP dan nano ABKS. Sifat mekaniknya meningkat pada komposisi 2 sampai 6 % dibanding dengan HDPE murni. Secara umum kekuatan tarik tanpa kompatibiliser lebih besar dibanding dengan kompatibiliser. Dengan diperolehnya filler dalam ukuran nano meter dapat meningkatkan sifat mekanik dari material komposit sehingga berfungsi juga sebagai kompatibiliser. Sifat mekanik bahan pengisi nano ABKS lebih besar dibanding nano partikel ASP.

2. Dari analisa mekanik nano komposit HDPE campuran antara nano partikel bentonit alam terjadi peningkatan kekuatan tarik 2 sampai 6 %, kekuatan tarik terbesar pada 2 % berat yakni 31,08 MPa, dengan penambahan bentonit alam 8 sampai 10 % terjadi penurunan kekuatan tarik. Nano komposit dengan filler bentonit disintesis dengan CTAB memiliki sifat mekanik yang lebih baik.

Daftar Pustaka

Bhat, A.H., Abdul Khalil H.P.S., (2011), Nano Filler Based on Oil Palm ash Polypropylene Composites, *Bio Resources* 6(2) 1288-1297.

Bukit, N., Frida, E., and Harahap.M.H., (2013) Preparation Natural Bentonite In Nano Particle Material As Filler Nanocomposite High Density Polyethylene (HDPE) *Journal of Chemistry and Material Research*.3.13, 10-20

Fouad, H., Elleithy, R., Al-Zahrani, S. M., Ali, M. A., (2011). Characterization and processing of High Density Polyethylene/carbon nanocomposites, *Materials and Design*, 32: 1974-1980

Feng, M., Gong, F., Zhao, C., Chen, G., Zhang, Sand Yang, M. (2004) "Effect of Clay on the Morphology of Blends of Polypropylene and Polyamide 6/Clay Nanocomposites", *Polymer International* 53, 1529-1537

Ginting.E.M, Bukit N, Wirjosentono .B. Agusnar .H (2014), Karakterisasi Campuran Nano Partikel ASPDan ABKS Menjadi Nano Komposit Termoplastik HDPE, *Prosiding Simposium Fisika Nasional (SFN XXVII)*, Denpasar-Bali, 365-372

Ginting.E.M, Bukit N, (2014), Preparation and

Characterization of Rice Husk Ash as Filler Material in to Nanoparticles on Hdpe Thermoplastic Composites, Chemistry and Materials Research, vol 6.(7),14-24

Ginting .E.M,Harahap. H ,Mukti . Bukit N (2014) Pengolahan Bentonit Alam Menjadi Nano Partikel Bentonit Sebagai Bahan Pengisi Nano Komposit *High Density Poliethylene* , Laporan penelitian Hibah Universitas negeri Medan

Ginting .E.M . Bukit .N 2014 ,Karakterisasi Material .Unimed Press

Kord B,(2011) , Nano Filler Reinforcement effect on the Thermal ,Dynamic Mechanical ,and Morphological Behavior of HDPE /Rice Husk Flour Composites. bio resources 6,2,1351-1358

Koo, C. M., Ham, H. T., Kim, S.O., wang, K. H., and Chung, I. (2002). "The effect of crystallization on structure and morphology of polypropylene/claynanocomposites," *Macromolecules* 35, 5116-5130

Kohls,J.L, and Beaucage,(2002) , Rational Desing of Reinforced Rubber , Cur OP.Solid St Mat Sci ,6:183-194.

Kusmono, Z. A. Mohd Ishak, W. S. Chow, T. Takeichi Rochmadi, (2008), "Enhancement of properties of PA6/PP nanocomposites via organic modification and compatibilization 1M." J.polymer.Lett2/9 .655

Liu, H., Wu, Q., Han, G., Yao, F., Kojima, Y., dan Suzuki, S., (2008), Compatibilizing and toughening bamboo flour-filled HDPE composites: Mechanical properties and morphologies, Elsevier Composites: Part A 39: 1891-1900

Lei, Y., Wu, Q., Clemons, C. M., Yao. F., and Xu, Y. (2007). "Influence of nanoclay on properties of HDPE/wood composites," Journal of Applied Polymer science 18,1425-1433.

Leblance, J.R.(2002). Rubber-filler Interaction and Rheology properties in Filled Coumpound, Prog .Polym . Sci 27:627-687

Makadia, C.M. (2000). "Nanocomposites of Polypropylene by Polymer Melt Compounding Approach". University of Massachusetts Lowell: Master of Science Thesis.

Midhun Dominic C.D, P.M Sabura Begum, Rani

Joseph, Daisy Joseph, Prabith Kumar and Ayswarya E.P.,(2013) , Synthesis, Characterization And Appilcation Of Rice Husk Nanosilica In Natural Rubber ,International Journal of Science, Environment and Technology, Vol. 2, No 5, 2013

Nikmatin.S,(2013) , Kajian Sifat Termal Dan Kristalografi Nanopartikel Biomassa Rotan Sebagai Filler Bionanokomposit Prosiding Simposium Nasional Inovasi Pembelajaran dan Sains Bandung, Indonesia

Pocut Nurul Alam, Teuku Rihayat ,(2007), " Sintesa dan Karakteristik Sifat Mekanik Karet Nanokomposit", Jurnal Rekayasa Kimia dan Lingkungan Vol. 6, No. 1, hal. 1-6.

Samal, S. K., Nayak, S., and Mohanty, S. (2008). "Polypropylene nanocomposites. Effect of organo-modified layered silicates on mechanical, thermal and motphological performance," Journal of Thermoplastic Composite Material 8,,243-263

Tserki . V. Patzinou .P Da Panayiotou ,C (2006) , "Novel Biodegradable Composites based on Treated Lignacellulosic wasre Flour as Filler . Part II Development of Biodegradable Composite Using Treated and

Compatibilized waste flour" . *Composit Aplpled Science and Manufacturing* .
37: 1231-1238

Thuadaij, N and Nuntiya, A. 2008. Synthesis and Characterization of Nanosilica from Rice Husk Ash Prepared by Precipitation Method. *CMU.J. Nat. Sci. Special Issue on Nanotechnology* (2008) Vol 7(1)

Utracki, L.A., Sepehr, M., and Boccaleri, E. (2007). "Synthetic layered nanoparticles for polymeric nanocomposites (PNCs) A review." *Journal of Polymer Advanced Technology* 18, 1-37

Wu, Q., Lei, Y., Clemons, C.M., Yao, F., Xu, Y., and Lian, K, (2007), Properties of HDPE/Caly/Wood Nanocomposites, *Journal of Plastic Technology* 27, 108-115

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