

DAFTAR PUSTAKA

- Adhimah, N. N., Mulyati, A. H., & Widiastuti, D. (2017). Substitusi tepung terigu dengan tepung ampas kedelai pada produk cookies yang kaya akan serat pangan dan protein. *Ekologia: Jurnal Ilmiah Ilmu Dasar dan Lingkungan Hidup*, 17(1), 28-39.
- Afifah, N., Sarifudin, A., Purwanto, W. W., Krisanti, E. A., & Mulia, K. (2024). Glucomannan isolation from porang (*Amorphophallus muelleri* Blume) flour using natural deep eutectic solvents and ethanol: A comparative study. *Food Chemistry*, 453(May). <https://doi.org/10.1016/j.foodchem.2024.139610>
- Albanese, D., Cinquanta, L., & Di Matteo, M. (2007). Effects of an innovative dipping treatment on the cold storage of minimally processed Annurca apples. *Food Chemistry*, 105(3), 1054–1060. <https://doi.org/10.1016/j.foodchem.2007.05.009>
- Alonso-Sande, M., Teijeiro-Osorio, D., Remuñán-López, C., & Alonso, M. J. (2009). Glucomannan, a promising polysaccharide for biopharmaceutical purposes. *European Journal of Pharmaceutics and Biopharmaceutics*, 72(2), 453–462. <https://doi.org/10.1016/j.ejpb.2008.02.005>
- Amartasya, M. S., & Cahyani, D. A. (2021). Kajian Analisa Usaha Sale Pisang Gulung di UD. Putra Roti Banjarnegara. *Proceedings Series on Physical & Formal Sciences*, 2, 269–276. <https://doi.org/10.30595/pspfs.v2i.199>
- Amilia, W., & Chiron, M. (2017). Studi kelayakan usaha dan daya saing pada industri tepung tapioka di Kecamatan Pogalan Kabupaten Trenggalek. *JSEP (Journal of Social and Agricultural Economics)*, 10(2), 51-57.
- Anissa, M. N., Rahayoe, S., Harmayani, E., & Ulya, K. N. (2023). Extraction and Characterization of Glucomannan from Porang (*Amorphophallus oncophyllus*) with Size Variations of Porang. *AgriTECH*, 43(4), 328. <https://doi.org/10.22146/agritech.68886>
- AOAC (Association of Official Analytical Chemist). (1995). Official Methods of Analysis of Association of Official Analytical Chemists, 16th edn. Arlington, VA, Method 993.13.
- AOAC (Association of Official Analytical Chemist). (2006). Official Methods of Analysis of Association of Official Analytical Chemists, Washington DC.
- AOAC (Association of Official Analytical Chemist). (2015). Official Methods of Analysis of the Association of Official Analytical Chemists. Arlington:AOAC Inc.
- Bresnick, S. (2003). Kimia Organik, (Jakarta: Hipokrates).

- Chairiyah, N., Harijati, N., & Mastuti, R. (2013). Variation of Calcium Oxalate (CaOx) Crystals in Porang (*Amorphophallus muelleri* Blume). *American Journal of Plant Sciences*, 04(09), 1765–1773. <https://doi.org/10.4236/ajps.2013.49217>
- Chua, M., Chan, K., Hocking, T. J., Williams, P. A., Perry, C. J., & Baldwin, T. C. (2012). Methodologies for the extraction and analysis of konjac glucomannan from corms of *Amorphophallus konjac* K. Koch. *Carbohydrate Polymers*, 87(3), 2202–2210. <https://doi.org/10.1016/j.carbpol.2011.10.053>
- Coté, G. G., & Gibernau, M. (2012). Distribution of calcium oxalate crystals in floral organs of araceae in relation to pollination strategy. *American Journal of Botany*, 99(7), 1231–1242. <https://doi.org/10.3732/ajb.1100499>
- Desi Kurniawati, A., & Bambang Widjanarko, S. (2010). Pengaruh Tingkat Pencucian dan Lama Kontak dengan Etanol terhadap Sifat Fisik dan Kimia Tepung Porang (*Amorphophallus oncophyllus*) *Effects of Multiple Ethanol Leaching with Difference Concentration on Physichal and Chemical Properties of Porang Flour* <https://doi.org/10.13140/RG.2.1.3850.0083>
- Devaraj, R. D., Reddy, C. K., & Xu, B. (2019). Health-promoting effects of konjac glucomannan and its practical applications: A critical review. *International Journal of Biological Macromolecules*, 126, 273–281. <https://doi.org/10.1016/j.ijbiomac.2018.12.203>
- Dinarsari, A. A., & Adhitasari, A. (2013). Proses Hidrolisa Pati Talas Sente (*Alocasia macrorrhiza*) Menjadi Glukosa Studi Kinetika Reaksi. *Jurnal Teknologi Kimia Dan Industri*, 2(4), 253–260.
- Dipahayu, D., & Kusumo, G. G. (2020). Optimasi Ekstraksi Konjac Glukomanan dari Umbi Porang (*Amorphophallus muelleri* Blume) dengan Variasi Perbandingan Serbuk Umbi Porang: Aquadest (Pelarut) dan Suhu. *SNITT-Politeknik Negeri Balikpapan*, 4, 466–469. <https://repository.stifar.ac.id/Repository/article/view/46>
- Endah, M. M, Satmalawati, M., Paramita, B.L., & Nino, J (2024). Karakteristik Fisikokimia dan Sifat Fungsional Pati Alami Ubi Kayu Hasil Ekstraksi Secara Sederhana. *Jurnal Teknologi Pertanian*, 13(1), 55-64.
- Ersa, V., Raf, M., & Kartika, S. (2021). Pengaruh Direct Selling terhadap minat beli pada produk PT Surya Sentosa Primatama-Daihatsu Jambi. *Jurnal Dinamika Manajemen*, 9(1), 19–30.
- Faridah, D. N., Solihat, I., & Yuliana, N. D. (2020). Validation of mineral (Fe, Zn, and Cu) analysis methods in carbohydrate, protein and fat-rich samples using microwave digestion method. *Indonesian Journal of Chemistry*, 20(2), 348-359.

- Food and Agriculture Organization (FAO). (1996). Konjac flour (v. 4, Issue 1996). Retrieved from http://www.fao.org/fileadmin/user_upload/jecfa_additives/docs/Monograph1/additive-245-m1.pdf
- Felix da Silva, D., Ogawa, C. Y. L., Sato, F., Neto, A. M., Larsen, F. H., & Matumoto-Pintro, P. T. (2020). Chemical and physical characterization of Konjac glucomannan-based powders by FTIR and ¹³C MAS NMR. *Powder Technology*, 361, 610–616. <https://doi.org/10.1016/j.powtec.2019.11.071>
- Ferdian, M. A., & Perdana, R. G. (2021). Teknologi Pembuatan Tepung Porang Termodifikasi Dengan Variasi Metode Penggilingan Dan Lama Fermentasi. *Jurnal Agroindustri*, 11(1), 23–31. <https://doi.org/10.31186/j.agroindustri.11.1.23-31>
- Gonçalves, C., Maria Rodriguez-Jasso, R., Gomes, N., Teixeira, J. A., & Belo, I. (2010). Adaptation of dinitrosalicylic acid method to microtiter plates. Vol 2. <https://doi.org/10.1039/c0ay00525h>
- Guo, L., Yokoyama, W., Chen, L., Liu, F., Chen, M., & Zhong, F. (2021). Characterization and physicochemical properties analysis of konjac glucomannan: Implications for structure-properties relationships. *Food Hydrocolloids*, 120(March), 106818. <https://doi.org/10.1016/j.foodhyd.2021.106818>
- Hamsah. (2013). Karakterisasi Sifat Fisikokimia Tepung Buah Pedada (*Sonneratia caseolaris*). Program Studi Ilmu Dan Teknologi Pertanian : Makassar <https://repository.unhas.ac.id/id/eprint/8614/2/hamsah311-1275-1-13-hamsa-%29%201-2.pdf>
- Handayani, T., Aziz, Y. S., & Herlinasari, D. (2020). Pembuatanana dan Uji Mutu Tepung Umbi Porang (*Amorphophallus Oncophyllus Prain*) di Kecamatan Ngrayun. *MEDFARM: Jurnal Farmasi Dan Kesehatan*, 9(1), 13–21. <https://doi.org/10.48191/medfarm.v9i1.27>
- Handayani, T. D., Harmayani, E., & Pranoto, Y. (2023). Karakteristik Glukomanan Tepung Porang (*Amorphophallus oncophyllus*) Dengan Berbagai Metode Ekstraksi Kimia. *J. Sains Dan Teknologi Pangan*, 8(3), 6360–6369.
- Harlina, S., Harimu, L., & Haeruddin. (2022). Pemisahan Senyawa Glukomanan Dari Umbi Kano (*Dioscorea alata* L.) Asal Wakatobi Menggunakan Pelarut Etanol. *Jurnal Ilmu Kimia Dan Pendidikan Kimia*, 11(2), 118–126. <http://ojs.uho.ac.id/index.php/SAINS>

- Haryani, K. dan, & Hargono. (2008). Proses Pengolahan Iles-Iles (*Amorphophallus* sp) Menjadi Glukomanan Sebagai Gelling Agent Pengganti Boraks. *Momentum*, 4(2), 38–41.
- Herawati, H. (2018). Potensi Hidrokoloid Sebagai Bahan Tambahan Pada Produk Pangan Dan Nonpangan Bermutu. *Jurnal Penelitian Dan Pengembangan Pertanian*, 37(1), 17. <https://doi.org/10.21082/jp3.v37n1.2018.p17-25>
- Kemenperin RI. (2022). *Pasar Ekspor Potensial, Kemenperin Terus Kembangkan Hilirisasi Industri Porang*. Jakarta : Kementrian Perindustrian Republik Indonesia
- Konjac Glucomannan Matrix Tablet for Extended Release of*. (2014). 5(3), 2098–2108.
- Kurt, A., & Kahyaoglu, T. (2017). Purification of glucomannan from salep: Part 2. Structural characterization. *Carbohydrate Polymers*, 169, 406–416. <https://doi.org/10.1016/j.carbpol.2017.04.052>
- Li, C., Dhital, S., & Gidley, M. J. (2022). High-amylose wheat bread with reduced in vitro digestion rate and enhanced resistant starch content. *Food Hydrocolloids*, 123, 107181. <https://doi.org/10.1016/j.foodhyd.2021.107181>
- Li, J., Li, B., Geng, P., Song, A. X., & Wu, J. Y. (2017). Ultrasonic degradation kinetics and rheological profiles of a food polysaccharide (konjac glucomannan) in water. *Food Hydrocolloids*, 70, 14–19. <https://doi.org/10.1016/j.foodhyd.2017.03.022>
- Li, Y., Liu, H., Xie, Y., Shabani, K. I., & Liu, X. (2021). Preparation, characterization and physicochemical properties of Konjac glucomannan depolymerized by ozone assisted with microwave treatment. *Food Hydrocolloids*, 119(2), 106878. <https://doi.org/10.1016/j.foodhyd.2021.106878>
- Liu, J. Y., Wang, H. C., Yin, Y., Li, N., Cai, P. L., & Yang, S. L. (2012). Controlled acetylation of water-soluble glucomannan from *Bletilla striata*. *Carbohydrate Polymers*, 89(1), 158–162. <https://doi.org/10.1016/j.carbpol.2012.02.065>
- Luo, X., He, P., & Lin, X. (2013). The mechanism of sodium hydroxide solution promoting the gelation of Konjac glucomannan (KGM). *Food Hydrocolloids*, 30(1), 92–99. <https://doi.org/10.1016/j.foodhyd.2012.05.012>
- Mali, S., Grossmann, M. V. E., Garcia, M. A., Martino, M. N., & Zaritzky, N. E. (2002). Microstructural characterization of yam starch films. *Carbohydrate Polymers*, 50(4), 379–386. [https://doi.org/10.1016/S0144-8617\(02\)00058-9](https://doi.org/10.1016/S0144-8617(02)00058-9)

- Martin, A; Swarbick, J; Cammarata, A. (2008). *Farmasi Fisik : Dasar-Dasar Farmasi Fisik dalam Ilmu Farmasetik*. Universitas Indonesia
- Mawarni, R. T., & Widjanarko, S. B. (2015). Terhadap Penurunan Oksalat Tepung Porang *Grinding By Ball Mill With Chemical Purification on Reducing Oxalate in Porang Flour*. 3(2), 571–581.
- Mortensen, A., Aguilar, F., Crebelli, R., Di Domenico, A., Frutos, M. J., Galtier, P., Gott, D., Gundert-Remy, U., Lambré, C., Leblanc, J., Lindtner, O., Moldeus, P., Mosesso, P., Oskarsson, A., Parent-Massin, D., Stankovic, I., Waalkens-Berendsen, I., Woutersen, R. A., Wright, M., Dusemund, B. (2017). Re-evaluation of konjac gum (E 425 i) and konjac glucomannan (E 425 ii) as food additives. *EFSA Journal*, 15(6). <https://doi.org/10.2903/j.efsa.2017.4864>
- Mukkun, L., Songgor, K., Lalel, H. L., Rubak, Y. T., Roefaida, E., Tae, A. S. J. A., Cakswindryandani, N. L. P. R., & Nalle, R. P. I. (2022). Karakteristik Fisik, Kadar Air, dan Kandungan Glukomanan Tepung Porang (*Amorphophallus muelleri* Blume) Melalui Beberapa Teknik Perendaman. *Agrisa*, 11(2), 122–130.
- Nguyen, A. T., Hoa, N. T., Thien, D. T., Hue, V. T., Minh Thu, V. T., & Thu Trang, L. T. (2016). Characterization of Glucomannan From *Amorphophallus Panomensis* in Vietnam. *Vietnam Journal of Science and Technology*, 54(2), 224. <https://doi.org/10.15625/0866-708x/54/2/6384>
- Nguyen, T. A., Do, T. T., Nguyen, T. D., Pham, L. D., & Nguyen, V. Du. (2011). Isolation and characteristics of polysaccharide from *Amorphophallus corrugatus* in Vietnam. *Carbohydrate Polymers*, 84(1), 64–68. <https://doi.org/10.1016/j.carbpol.2010.10.074>
- Nick Triantafillopoulos. (1988). *Measurement of Fluid Rheology and Interpretation of Rheograms by Measurement of Fluid Rheology and Interpretation of Rheograms Second Edition*. <http://www.kaltecsci.com/rheology.pdf>
- Nishinari, K., & Takemasa, M. (2007). *Xyloglucan as storage polysaccharide*. 613–623.
- Nurlela, Nina Ariesta, Dwi Sutari Laksono, Edi Santosa, T. M. (2021). *Characterization of glucomannan extracted from fresh porang tubers using ethanol technical grade*. *Molekul*, 16(1), 1-8. 16. <http://dx.doi.org/10.20884/1.jm.2021.16.1.632>
- Nurlela, Andriani, D., & Arizal, R. (2020). Ekstraksi Glukomanan dari Tepung Porang (*Amorphophallus muelleri* Blume) dengan Etanol Extraction of Glucomannan from porang (*Amorphophallus muelleri* Blume) flour using Ethanol Ekstraksi Glukomanan dari Tepung Iles-Iles Kuning (Nurlela , dkk). *Sains Dan Terapan Kimia*, 14(2), 88–98.

- Nurlela, N., Ariesta, N., Santosa, E., & Muhandri, T. (2022). Physicochemical properties of glucomannan isolated from fresh tubers of *Amorphophallus muelleri* Blume by a multilevel extraction method. *Food Research*, 6(4), 345-353.
- Ojima, R., Makabe, T., Prawitwong, P., Takahashi, R., Takigami, M., & Takigami, S. (2009). Rheological Property of Hydrolyzed Konjac Glucomannan. *Transactions of the Materials Research Society of Japan*, 34(3), 477–480. <https://doi.org/10.14723/tmrj.34.477>
- Oktalina, R., Taruna, I., & Sutarsi. (2014). Reologi Puree Buah Jambu Biji Merah (*Psidium guajava* L.) Pada Berbagai Konsentrasi. *Berkala Ilmiah Teknologi Pertanian*, 1(1), 1–4.
- Pratama, M. Z., Agustina, R., & Munawar, A. A. (2020). Kajian Pengeringan Porang (*Amorphophallus Oncophyllus*) berdasarkan Variasi Ketebalan Lapisan Menggunakan Tray Dryer. *Jurnal Ilmiah Mahasiswa Pertanian*, 5(1), 351-360.
- Peiying, L. (2002). Professional Standard of the Konjac flour. *Ministry of the People's Republic of China*.
- Priadi, G., Setiyoningrum, F., Afiati, F., & Syarief, R. (2018). Pemanfaatan modified cassava flour dan tepung tapioka sebagai bahan pengisi keju cedar olahan. *Jurnal Litbang Industri*, 8(2), 61. <https://doi.org/10.24960/jli.v8i2.4050.61-66>
- Putri, E. (2016). Kualitas Protein Susu Sapi Segar Berdasarkan Waktu Penyimpanan. *Chempublish Journal*, 1(2), 14–20.
- Rahmi, N., Salim, R., Khairiah, N., Yuliati, F., & Hidayati, S. (2021).. Pemanfaatan dan pengolahan tepung glukomannan umbi porang (*Amorphophallus Muelleri*) sebagai bahan pengental produk olahan bakso. *Indonesian Journal of Industrial Research*, 348-361.
- Riyadipura, A. (2015). Pengembangan Metode Analisis Kadar Kalium Dalam Daun Kelor (*Moringa Oleifera*) Dengan Metode Konduktometri. Prosiding Penelitian SPeSIA Unisba, 591-595. *Unisba*, 331–335.
- Sahputra, R., & Pontianak, U. T. (2024). Analisis Kandungan Kalium (K) Pada Tanaman Porang (*Amorphophallus Oncophyllus*). 4(1), 1–5.
- Sari, R., & Suharti. (2015). Tumbuhan Porang: Prospek Dibudidayakan sebagai Tumbuhan Porang : Prospek Budidaya Sebagai Salah Satu Sistem Agroforestry. *Info Teknis Eboni*, 12(2), 97–110.
- Sholichah, E., Purwono, B., Murdiati, A., Syoufian, A., & Sarifudin, A., (2023). Extraction of glucomannan from porang (*Amorphophallus muelleri* Blume) with freeze-thaw cycles pre-treatment. *Food Science and Technology*, 43(5), 1–10. <https://doi.org/10.5327/fst.1423>

- Siswanti, (2009). Characterization of composite edible film from glucomanan of iles-iles (*Amorphophallus muelleri*) tuber and cornstarch. *Smujo.Id*. Retrieved May 27, 2025, from <https://smujo.id/jnpb/article/view/1870>
- Skoog, D. A., Holler, F. J., & Nieman, T. A. (1998). *Principles of Instrumental Analysis*. Saunders College Pub
- Subandi, & Sukiyadi, D. (2020). Testing the Efficiency and Effectiveness of the Use of Solvent Fat for the Research and Courses of Oil Content Testing. *Pengujian Efisiensi Dan Efektifitas Penggunaan Pelarut Lemak Untuk Aplikasi Pelaksanaan Praktikum Dan Penelitian Pengujian Kadar Lemak Minyak, November*, 89–98.
- Sumarwoto, S. (1970). Iles-iles (*Amorphophallus muelleri* Blume); description and other characteristics. *Biodiversitas Journal of Biological Diversity*, 6(3). <https://doi.org/10.13057/biodiv/d060310>
- Sutriningsih, A., & Ariani, N. L. (2017). Efektivitas umbi porang (*Amorphophallus oncophyllus*) terhadap penurunan kadar glukosa darah penderita diabetes mellitus. *Care: Jurnal Ilmiah Ilmu Kesehatan*, 5(1), 45-58.
- Tanjung, K. (2022). Perencanaan Bisnis Industri Tepung Glukomanan Porang (*Amorphophallus oncophyllus*). *Agroindustrial Technology Journal*, 6(2), 78–91. <https://doi.org/10.21111/atj.v6i2.8452>
- Tirta Wulandari Wening Kusuma, P., & Kartika Indah Mayasti, N. (2014). Analisa Kelayakan Finansial Pengembangan Usaha Produksi Komoditas Lokal: Mie Berbasis Jagung. *Agritech*, 34(2), 194–202.
- Vlachos, N., Skopelitis, Y., Psaroudaki, M., Konstantinidou, V., Chatzilazarou, A., & Tegou, E. (2006). Applications of Fourier transform-infrared spectroscopy to edible oils. *Analytica Chimica Acta*, 573–574, 459–465. <https://doi.org/10.1016/j.aca.2006.05.034>
- Wardhani, D. H., Rahayu, L. H., Cahyono, H., & Ulya, H. L. (2020). Purification of glucomannan of porang (*Amorphophallus oncophyllus*) flour using combination of isopropyl alcohol and ultrasound-assisted extraction. *Reaktor*, 20(4), 203-209.
- Wang, C., Chen, Z. M., Li, D., & Lv, W. (2011). *Structure and Properties of Konjac Glucomannan Solved in Alcohol / Water*. 198, 1310–1314. <https://doi.org/10.4028/www.scientific.net/AMR.197-198.1310>

- Wang, S., Zhou, B., Wang, Y., & Li, B. (2015). Preparation and characterization of konjac glucomannan microcrystals through acid hydrolysis. *FRIN*, 67, 111–116. <https://doi.org/10.1016/j.foodres.2014.11.008>
- Widjanarko, S. B., & Megawati, J. (2015). Analisis Metode Kolorimetri dan Gravimetri Pengukuran Kadar Glukomanan Pada Konjak (*Amorphophallus* Konjac). *Jurnal Pangan Dan Agroindustri*, 3(4), 1584–1588. <https://jpa.ub.ac.id/index.php/jpa/article/view/283/292>
- Widjanarko, S. B., Widyastuti, E., & Rozaq, F. I. (2015). The effect of porang (*Amorphophallus muelleri* Blume) milling time using ball mill (Cyclone separator) method toward physical and chemical properties of porang flour. *Jurnal Pangan Dan Agroindustri*, 3(3), 867–877.
- Wigoeno, Y. A., Azrianingsih, R., & Roosdiana, A. (2013). Analisis Kadar Glukomanan pada Umbi Porang (*Amorphophallus muelleri* Blume) Menggunakan Refluks Kondensor. *Jurnal Biotropika*, 1(5), 231–235.
- Witoyo, J. E., Ni'Maturohmah, E., Argo, B. D., Yuwono, S. S., & Widjanarko, S. B. (2020). Polishing effect on the physicochemical properties of porang flour using centrifugal grinder. *IOP Conference Series: Earth and Environmental Science*, 475(1). <https://doi.org/10.1088/1755-1315/475/1/012026>
- Yang, Y., Zheng, S., Li, Z., Pan, Z., Huang, Z., Zhao, J., & Ai, Z. (2021). Influence of three types of freezing methods on physicochemical properties and digestibility of starch in frozen unfermented dough. *Food Hydrocolloids*, 115(December 2020), 106619. <https://doi.org/10.1016/j.foodhyd.2021.106619>
- Yanuriati, A., & Basir, D. (2020). Peningkatan Kelarutan Glukomanan Porang (*Amorphophallus muelleri* Blume) dengan Penggilingan Basah dan Kering. *AgriTECH*, 40(3), 223. <https://doi.org/10.22146/agritech.43684>
- Yanuriati, A., Marseno, D. W., Rochmadi, & Harmayani, E. (2017). Characteristics of glucomannan isolated from fresh tuber of Porang (*Amorphophallus muelleri* Blume). *Carbohydrate Polymers*, 156, 56–63. <https://doi.org/10.1016/j.carbpol.2016.08.080>
- Yaseen, E. I., Herald, T. J., Aramouni, F. M., & Alavi, S. (2005). Rheological properties of selected gum solutions. *Food Research International*, 38(2), 111–119. <https://doi.org/10.1016/j.foodres.2004.01.013>
- Yuanita, M. 2008. Penurunan Kadar Asam Oksalat pada Tepung Porang menggunakan Kombinasi Hammer Mill, Stamp Mill, dan Fraksinasi Hembusan Blower. Skripsi. Universitas Brawijaya. Malang. Hlm 150
- Yusuf, M., Arfini, F., & Attahmid, N. F. U. (2016). Formulasi Baruasa Kaya Glukomanan Berbasis Umbi Uwi (*Dioscorea Alata* L.). *Jurnal Galung*

Tropika, 5(2), 97–108. <https://doi.org/10.31850/jgt.v5i2.167>

Zhang, C., Chen, J. Da, & Yang, F. Q. (2014). Konjac glucomannan, a promising polysaccharide for OCDDS. *Carbohydrate Polymers*, 104(1), 175–181. <https://doi.org/10.1016/j.carbpol.2013.12.081>

Zhou, N., Zheng, S., Xie, W., Cao, G., Wang, L., & Pang, J. (2022). Konjac glucomannan: A review of structure, physicochemical properties, and wound dressing applications. *Journal of Applied Polymer Science*, 139(11), 1–16. <https://doi.org/10.1002/app.51780>