Submission article paper RJC-2018

Heri Sutanto <herisutanto@fisika.undip.ac.id> 12 September 2018 pukul 13.17
Kepada: "RASĀYAN J. Chem." <rasayanjournal@gmail.com>

Dear Rasayan Journal of Chemistry Editor,

We would like to submit a new manuscript entitled "**A Simple Route Synthesis of Polycrystalline TiO_2-Ag by the Sonochemical Method for Photocatalytic Direct Blue71 Degradation**" to be considered by the Rasayan Journal of Chemistry for publication. In this paper, we focused on the synthesis of TiO_2 doped with Silver (Ag) using the sonochemical method to be applied as a material capable of degrading the Direct Blue 71 (DB71) liquid waste. Direct Blue 71 itself is a very dangerous waste in the textile industry in Indonesia. The purpose of this research is to synthesis new photo catalyst material as a new potential material for direct blue 71 waste treatment. For the novelty in this research, we have successfully synthesized TiO_2 doped by Ag in the form of powder as an alternative material for photo catalyst. Profitability, the sample in powder form can be directly used to degrade waste from the textile industry, this is because the powder has a very small size and able to provide a chemical process that the photo catalyst process for the better. This has been shown with our results show that the use of TiO_2-Ag in powder form has reduced the Direct Blue 71 solution concentration and has a degradation efficiency of nearly 60%.

We believe that this manuscript is appropriate for publication in the Rasayan Journal of Chemistry. We have no conflicts of interest to disclose. In addition we have checked the plagiarism using Turnitin online software and Enago proofreading, which results we have submitted with this file. If you feel that the manuscript is appropriate for your journal, I am looking forward to hearing from you soon.

Please address all correspondence concerning this manuscript to my email address: herisutanto@fisika.undip.ac.id.

Thank you for considering this manuscript.

Regards,
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Revision-1

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Manuscript No: RJC- 5034/2018 (Please use this number in any future correspondence.)	**A Simple Route Synthesis of Polycrystalline TiO_2-Ag by the Sonochemical Method for Photocatalytic Direct Blue71 Degradation** H. Sutanto[a,b,*], I. Marhaendrajaya[a], G. W. Jaya[a], E. Hidayanto[a], M. Mukholit[a], S. Wibowo[a], Y. Wahyono[a]
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Thank for the information you have provided. Please let me know in advanced.
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Here I send the final revision of our manuscript RJC-5034 as your suggestion.
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A SIMPLEROUTE SYNTHESIS OF POLYCRYSTALLINE TiO_2-Ag BY THE SONOCHEMICAL METHOD FOR PHOTOCATALYTIC DIRECT BLUE71 DEGRADATION

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ABSTRACT

In this paper, silver-doped titania (TiO_2-Ag) powders have been synthesized with Ag variants using a simple sonochemical method. The prepared samples were identified using X-ray diffractometry (XRD) and scanning electron microscopy (SEM) to investigate the crystal structure and morphology, respectively. All samples showed the polycrystalline anatase phase and the plane exhibited the (101) dominant orientation. The smallest crystallite sample size of about 14.9 nm was obtained with a 3% Ag doping (TAg3). At higher Ag concentrations, the metal peaks could be detected at 44.3° and 64.4°. SEM images showed that all samples were agglomerated except the TAg3 sample with the lowest surface area of the active sites. Photocatalytic activity was carried out using Direct Blue 71 (DB71) as an organic pollutant. TAg4 exhibited the highest activity under ultraviolet (UV) irradiation with a degradation rate of 0.01 ppm/min. Results suggest that our TiO_2-Ag photocatalyst performed well when prepared by a simple sonochemical method.

Keywords: Titania, Ag doping, sonochemical, photocatalytic, direct blue 71.

INTRODUCTION

Environmental pollution is a global problem today[1]. Indonesia faces environmental problems due to water pollution from industries such as Batik wastewater[2]. Water treatment technology is neededto overcome this problem. Recently, the use of photocatalyststreatment for the degradation of organic pollutants has been developed by many researchers[3]. The commonly used photocatalyst is titanium dioxide or titania (TiO_2). This material is widely used due to its high efficiency, affordability, non-toxicity, inert-properties and biological photo stability[4,5]. There have been several attempts to improve the ability of TiO_2 materials, e.g., through synthesis of TiO_2-nanocarbon composites.

This method increases in photocatalytic ability, however some problems inhibit the efficiency of TiO_2-nanocarbon composites, such as weakening of light intensity on catalytic surfaces and lack of reproducibility in sample processing and preparation[6]. TiO_2 Nanoparticles coating on the transparent plastic granules is conducted by variedelectrostatic and heating technique for the photocatalytic degradation of organic pollutants in water[7,8].The main drawback of TiO_2 materials is their enormous energy band gap which is about 3.2 eV.It can be excited only under ultraviolet (UV) light, which has a wavelength of less than 387.5 nm and represents only 5% of the solar spectrum[9]. Therefore, there have been various attempts at obtaining TiO_2 materialsthat can work under visible and solar light and that can be utilized optimally[10].

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In addition, the modification of TiO_2 materials has been carried out to improve the physical properties of semiconductors in terms of electrical, optical and structural properties[11]. Element-doping onto TiO_2 has drawn the attention of many researchers in photocatalysis field. Some metals such as silver (Ag), aluminum (Al), and cobalt (Co), and nonmetals such as nitrogen (N), sulfur (S), and flour (F) have been used to enhancethe photocatalytic performance of TiO_2[12,13]. Recently, modification of TiO_2 with precious metals has received more attention as the implanted precious metals can reduce recombination of electron-hole pairs, increasing photocatalytic activity. Ag metal is more attractive because of itis non-toxic and affordable[14-15].TiO_2-Ag can be prepared using several methods such as the sol-gel method[16,17], chemical vapor deposition (CVD)[18], solvothermal synthesis[19], electrodeposition[20], hydrothermal synthesis[21], microwave-assisted synthesis[22], spray pyrolysis[23,24], and laser deposition[25]. In this paper, TiO_2-Agwas synthesizedby a simple sonochemical method. This method utilized irradiation with ultrasound waves imposed on a liquid medium. The ultrasonic waves in the liquid medium compressed and stretched the liquid medium structure continuously to form bubbles. These bubbles grew rapidly to their critical size and then erupted. When the bubbles erupted, they acted as hotspots that generated extremes of temperature and pressure[26]. The raised temperature reached 1000ºC, with a pressure of 1000 atm, and a heating-cooling speed of 10 billion/s.The sonochemical method has not been widely used by some researchers to synthesize TiO_2-Ag.

The prepared samples were evaluated by XRD and SEM to check the crystal structure and morphology, respectively. Photocatalytic evaluation was carried out under UV light irradiation using DB71 as an organic pollutant, typically used in Batik industries.

EXPERIMENITAL

TiO_2:Ag was prepared by the sonochemical method as described previously[4]. Titanium (IV) isopropoxide (TTiP) and silver nitrate ($AgNO_3$) were used as Ti and Ag sources, respectively. Acetone and methanol were used as solvents. 5 ml of TTiP was mixed with 1 ml of acetone and 1 ml of methanol using a magnetic stirrer. $AgNO_3$was then added to the solution at concentrations of 2%, 3%, 4%, 5%, and 6%, which were denoted as TAg2, TAg3, TAg4, TAg5, and TAg6, respectively. The solution was irradiated with a 300 watts ultrasonic source (Krisbow, Type: 10039597)at a frequency of about 35 kHz at 60ºC for 3 h.The dried powders were collected followed by sintering at a temperature of 500ºC for 2 hours. The preparation procedureis displayed in Fig.-1. The samples wereidentified by XRD (Shimadzu XRD-7000) to investigate the crystallinity.The crystallite sizes of TiO_2-Ag samples were calculated using the following Scherrer formula:

$$D = 0.9\lambda/(\beta \cos\theta) \quad (1)$$

WhereD is crystallite size (grain size), λ is wavelength of X-rays, β is full width at half maximum (FWHM), and θ is diffraction angle.

Crystal strain wasidentifiedusingthe Williamson-Hall (W-H) equation as follows:

$$K = \left(\frac{2\sin\theta}{\lambda}\right) \quad (2)$$

$$\Delta K = \left(\frac{\beta\cos\theta}{\lambda}\right) \quad (3)$$

The microstructure was investigated by SEM (JEOL 6510-LA). Photocatalytic activity was carried out under aUV-C Lamp at 10 watts (λ = 250 ~ 280 nm) for 1 hour[27]. 10 ppm of DB71 was used as an organic pollutant. In order to observe the effect of Ag on TiO_2, bare TiO_2powder was applied for comparison. The absorbance data of DB71 before and after reaction was measured by UV-Vis spectrophotometry (Shimadzu 1240 SA). From these data, the photo-degradation activity was calculated showing the performance of the samples.

RESULTS AND DISCUSSION

XRD Analysis

The crystal structure of samples was analyzed by XRD and Fig.-2 shows the pattern of samples.All samples exhibited the anatase phase of the TiO_2 crystals (JCPDF 211272). The peaks of Ag metal were detected at an angle of 44.3ºindicating the (200) plane (JCPDF 040783) and at64.4ºindicating the (220)

plane (JCPDF 040783). The Ag peaks could be observed only at TAg6, indicating that the metal was formed at higher Ag concentrations. At TAg5 and lower Ag concentration samples, Ag ion might have been incorporated with the TiO_2 crystalline structure. Therefore, the metal peak could not be detected at lower Ag concentrations. The Ag ion might have subtituted Ti or O ion in the crystalline structure, leading to a shift in the XRD peaks.

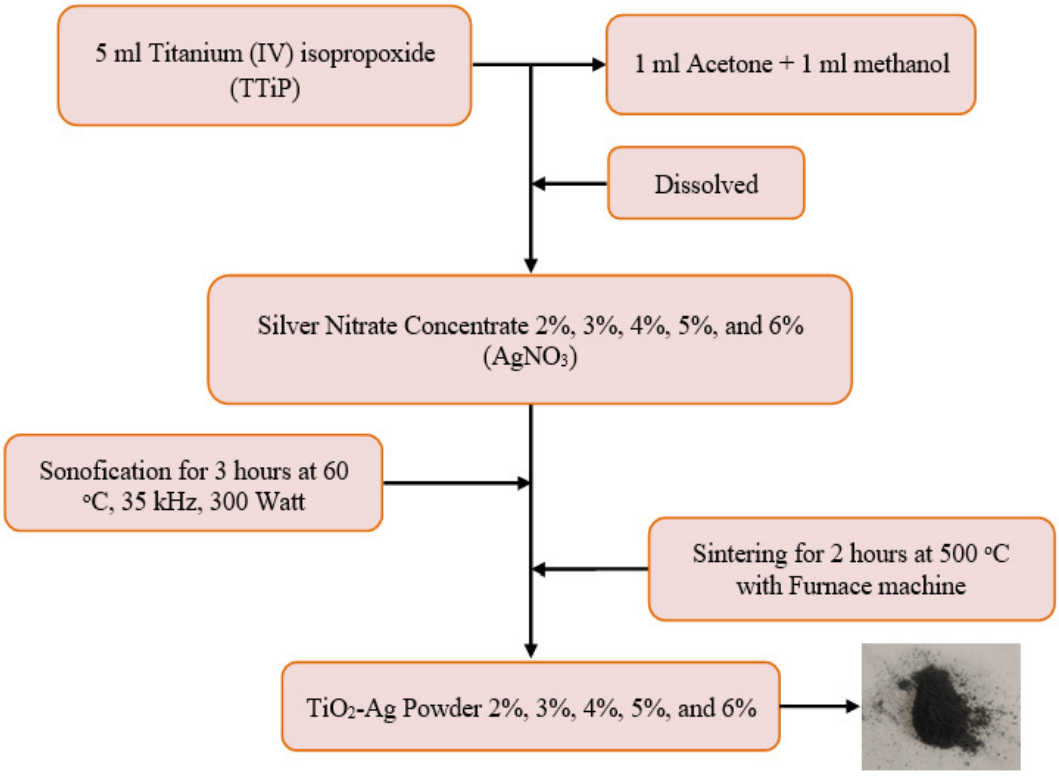


Fig.-1: Flowchart of Sample Preparation.

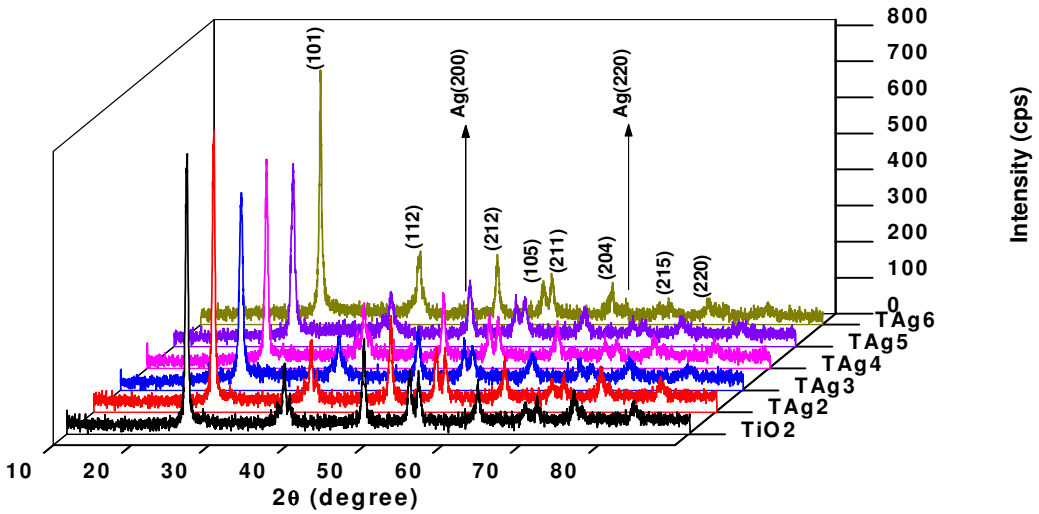


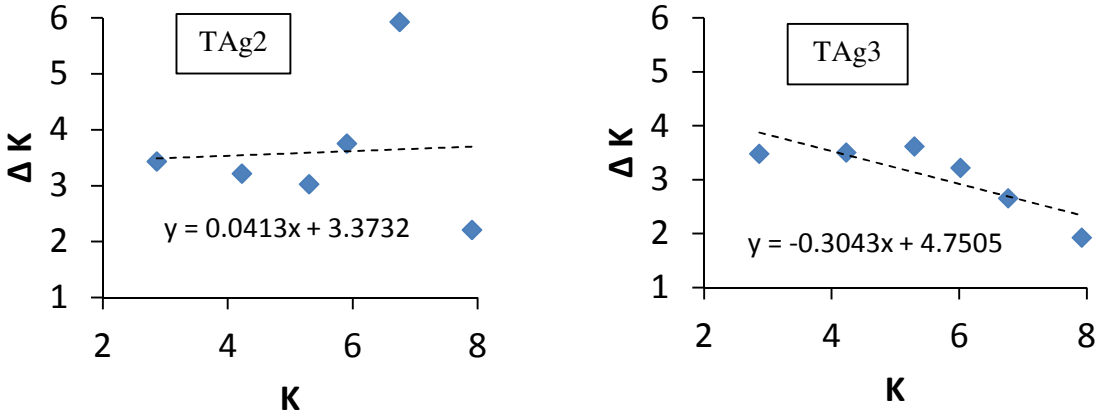
Fig.-2: XRD Characterization of Samples.

The crystallite size of samples was calculated using the Scherrer formula as presented in Table-1. TAg3 exhibited the smallest crystallite size among the samples, which might have affected their photocatalytic performance. The crystallite size of the sample was inconsistent with concentrations of Ag doping, which might have been caused by substitution and insertion of atoms. The substitution process reduced the crystallite size because Ti atoms (ionic radii of 147 pm) are replaced by Ag atom (ionic radii of 144), while the insertion decreased the crystallite size without any replacement of atoms. The same case in increasing Cu concentrations in the dimension of crystallite size for Cu doped TiO_2 nanoparticle[28].
Table-1 shows that substitution in TAg3 and TAg5 samples was a dominant process, while insertion was dominant for TAg2, TAg4, and TAg6 samples.

Table-1: Grain Size of Samples

Sample	D (nm)
TiO_2	21.4284 [29]
TAg2	17.6991
TAg3	14.9053
TAg4	20.6694
TAg5	15.3517
TAg6	21.8918

Figure-3 shows the crystal strain from XRD data calculatedusing the Williamson-Hall equation.The value of the crystal strain could be obtained from the line gradient of each sample graph. TAg2 and TAg5 samples exhibited positive crystal lattice strain values, while the others showed negative values. A positive value indicated that the sample had a lattice strain, while a negative value indicated that the sample had a lattice strength. This was due to the influence of the crystal size, where a smaller crystal size would produce a definite lattice strain, and the larger crystal size would result in a negative lattice strain. In addition, there were several other factors such as the influence of ultrasonic waves and the temperature of the furnace, which possibly affectedthe value of the crystal lattice strain.The strain values are various disorder, because of the increment in amount of unit cell per particle as a substitution of Ag^{1+}, Ag^{2+} and Ag^{3+} ions in Ti site. This results is similar to photocatalytic performance of Cu-doped TiO_2 nanoparticles[30].



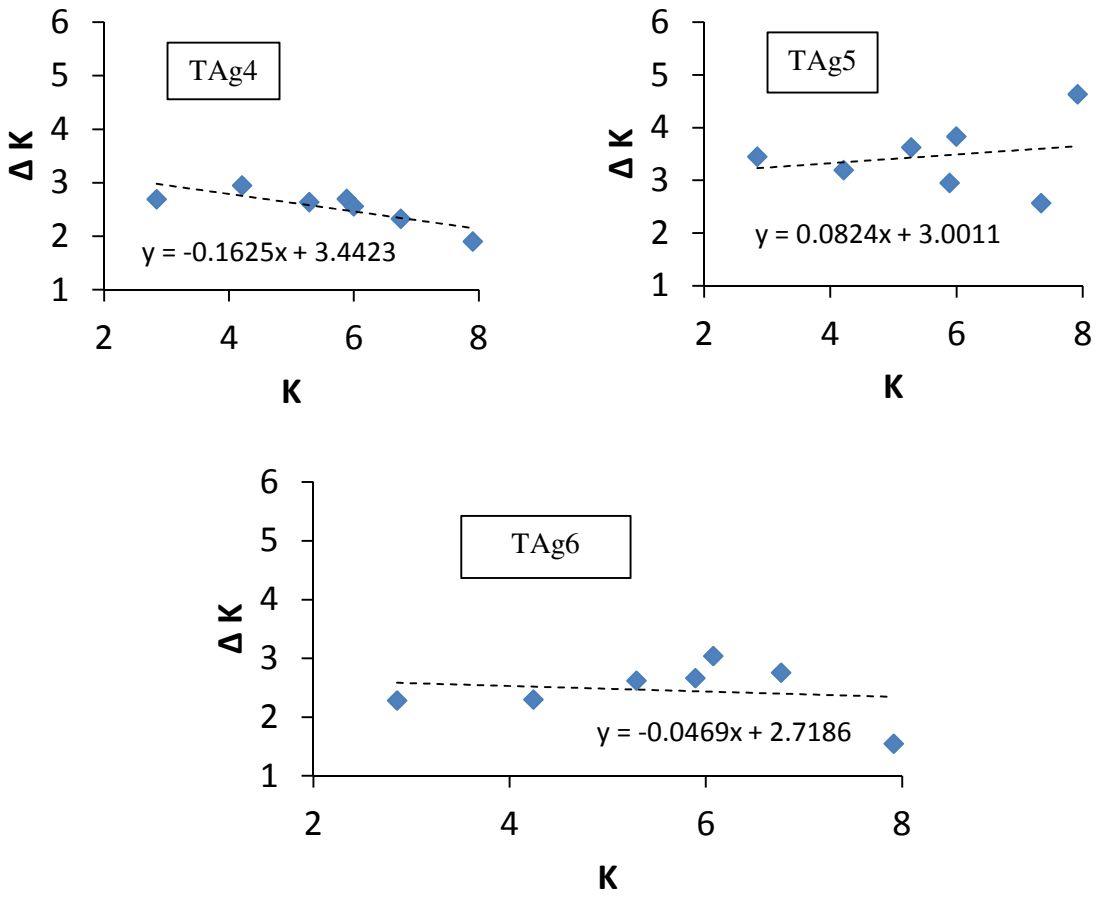


Fig.-3: The W-H plot of **K** versus **ΔK** for TiO_2-Ag.

The morphology of TiO_2-Agcan be seenby the SEM images as shown in Fig.-4. From these images,the morphology of the photocatalysts are shown to have been in accordance with crystallite size from XRD data. TAg4 and TAg6 samples had large lumps on the surface. This was due to agglomeration as a result of the Ag atom insertion. For the TAg5 sample, little lumps were found on the surface and resulted in a more substantial crystal size than in the TAg3. For the TAg2 and TAg3 samples, the lumps were found to be less dense as in the TAg4 and TAg6 samples.

Photocatalytic Activity

Figure-5 shows the degradation of DB71 concentration during the photocatalytic reaction of TiO_2-Ag samples.DB71 concentration decreased after being degraded by TiO_2-Ag powders for60 min. It was noted that, under dark conditions and UV light irradiation, the performance of bare TiO_2 was almost the same and quite low. This result indicated that Ag plays important role in enhancing the photo-degradation of DB71. Inserting Ag to TiO_2, Ag^{2+} ion should replace Ti^{4+} in TiO_2 lattice so that O−Ti−O turns to Ag−Ogenerate increasing of oxygen vacancies. The enhancement adsorbed oxygen on the surface will stabilize equilibrium oxygen vacancies in TiO_2 lattices[30]. We also checked the reaction under dark conditions, which showed no activity. TAg4showed the highest activity in reducing concentrations of DB71,which decreased by up to 51.28% after 60 min. Figure-6 shows the degradation rate of DB71 by prepared samples. TAg4 also exhibited the fastest rate of about 0.01 ppm/min.IncreasingAg atom in TiO_2 will decrease crystallite size of TiO_2-Ag, so that surfacearea of TiO_2-Ag particle will increase leads to grow up the number of active sites of photocatalyst for adsorption. This result correspond to Fig.-5b.

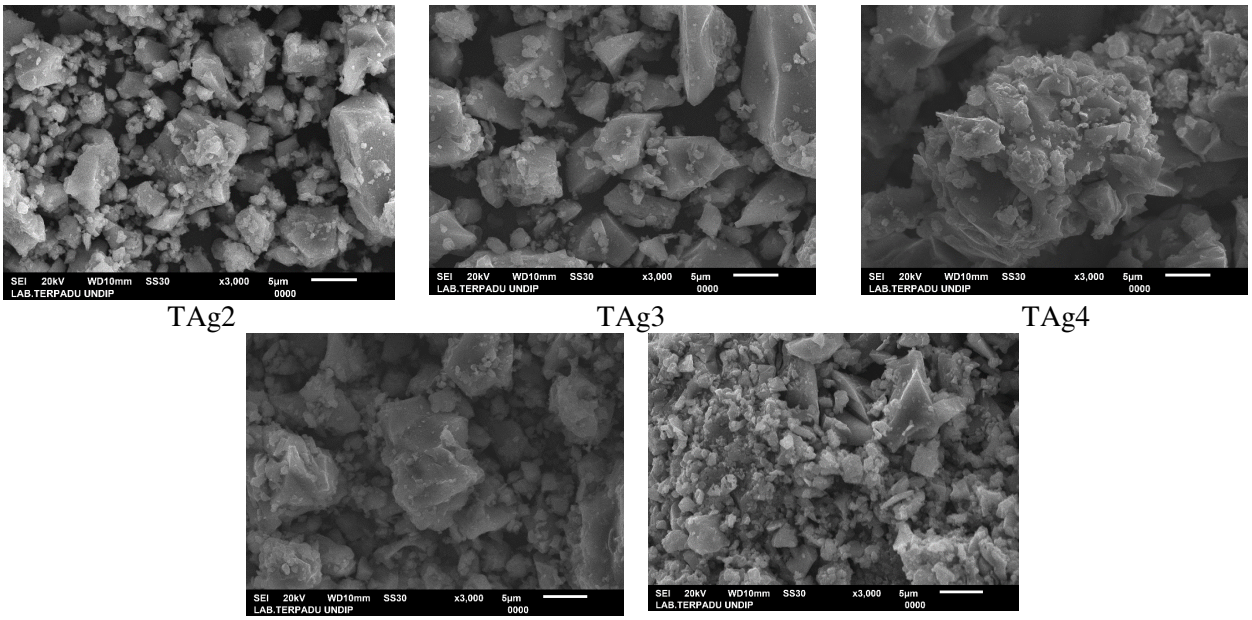
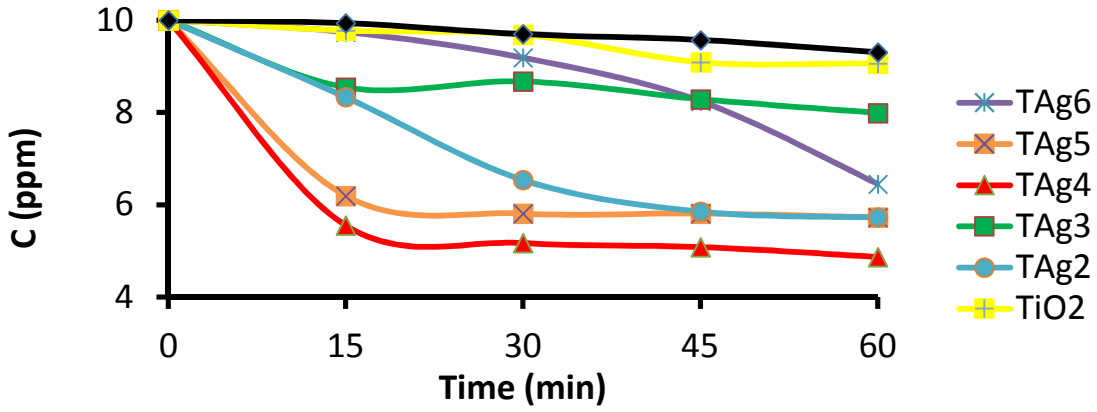
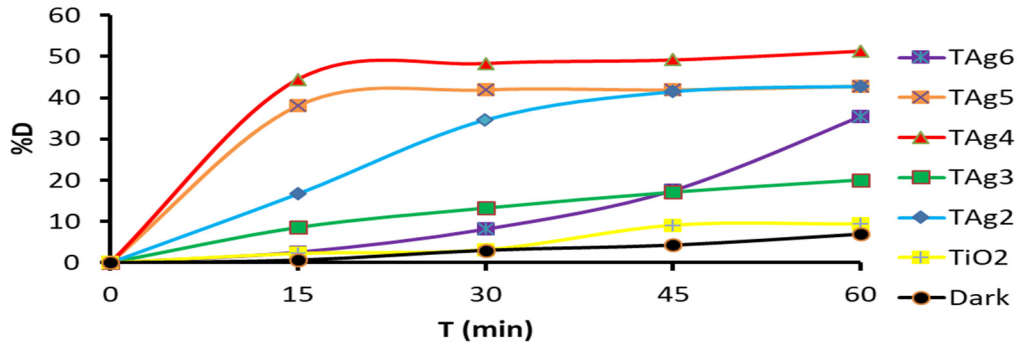


Fig.-4: SEM surface morphology composite TiO_2-Ag powder.



(a)



(b)

Fig.-5: (a) The decrease of DB71 concentration value every 15 minutes, and (b) Photo-degradation of DB71 by TiO_2-Ag samples under UV light irradiation.

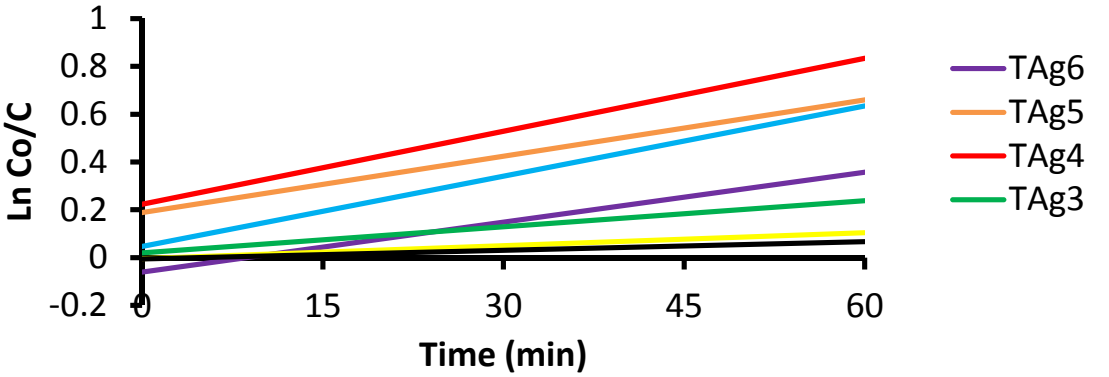


Fig.-6: The degradation rate of DB71.

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CONCLUSION

The TiO_2:Ag powder with various concentration of Ag was successfully preparedby a simple sonochemical method. XRD results showed that all samples had an anatase polycrystalline structure phase with a dominant orientation plane of (101). The SEM images displayed a clumped morphologyof the samples, except for the TAg3 sample as a result of the agglomeration of Ag particles. The photocatalytic tests showed that Ag-doped samples exhibit superior performance compare with bare TiO_2 powder, and that TAg4 performed best, with DB71 a degradation percentage of 51.28% and a degradation rate of 0.01 ppm/min.

ACKNOWLEDGEMENT

The authors would like to thank Integrated Laboratory Diponegoro University and Ministry of Research, Technology and Higher Education of Republic of Indonesia.

REFERENCES

1. N. R. Khalida, A.Majida, M. B.Tahira, N. A.Niaz, S.Khalid, *Ceramics International*,**43**,14552 (2017)DOI: https://doi.org/10.1016/j.ceramint.2017.08.143
2. H.Sutanto, E.Hidayanto, M.Irwanto, M.Mukholit, S.Wibowo, H.Hadiyanto, *Solid State Phenomena*, **266**:141 (2017)DOI: 10.4028/www.scientific.net/SSP.266.141
3. S. Sutisna, M. Rokhmat, E. Wibowo, K. Khairurrijal, M. Abdullah, *Sustainable Environment Research*, **27** (2017) DOI: http://dx.doi.org/10.1016/j.serj.2017.04.002
4. H.Sutanto, E. Hidayanto, M.Irwanto, M.Mukholit, S.Wibowo, I. Nurhasanah, H.Hadianto, *Material Science Forum,* **890**, 121 (2017)DOI: 10.4028/www.scientific.net/MSF.890.121
5. K.Ubonchonlakate, L.Sikonga, F.Saito, *Procedia Engineering,* **32**,656 (2012)DOI: https://doi.org/10.1016/j.proeng.2012.01.1323
6. G.Cinellia, F.Cuomoa, L.Ambrosone, M.Colella, A.Ceglie, F.Venditti, F.Lopez, *Journal of Water Process Engineering*, **20**, 71 (2017)DOI: 10.1016/j.jwpe.2017.09.014
7. S. Sutisna, M. Rokhmat, E. Wibowo, K. Khairurrijal, M. Abdullah, *Environmental Nanotechnology, Monitoring & Management*, **8** (2017) DOI: 10.1016/j.enmm.2017.04.002
8. M. P. D. Parimala, M. S. Kumar, M.C. Rao, *Rasayan Journal of Chemistry*, **10**, 3 (2017) DOI: http://dx.doi.org/10.7324/RJC.2017.1031746
9. M.Harikishorea, M.Sandhyarania, K.Venkateswarlua, T. A.Nellaippana, N.Rameshbabu, *Procedia Materials Science,* **6,** 557(2014)DOI: https://doi.org/10.1016/j.mspro.2014.07.071
10. S.Buzby, M. A.Barakat, H.Lin, C.Ni, S.A. Rykov, J. G.Chen, S. I. Shah, *Journal of Vacuum Science and Technology B*, **24**,1020 (2006)DOI: https://doi.org/10.1116/1.2192544
11. O.Örnek, Z. A.Kösemen, S.Öztürk, B.Canımkubey,Ş.Fındık, M.Erkovan, A.Kösemen, *Surfaces and Interfaces*, **9**, 64 (2017)DOI: 10.1016/j.surfin.2017.08.003
12. H.Sutanto, S.Wibowo, H.Hadiyanto, M.Arifin, E.Hidayanto, *Materials Research Express,* **4,** 1 (2017)DOI: https://doi.org/10.1088/2053-1591/aa7310

13. X.Cheng, H.Liu, Q.Chen, J.Li, P.Wang, *Electrochimica Acta,***103**, 134 (2013)DOI: https://doi.org/10.1016/j.electacta.2013.04.072
14. L.Elsellami, F.Dappozze, A.Houas, C.Guillard, *Superlattices and Microstructures,* **109**, 511 (2017)DOI: 10.1016/j.spmi.2017.05.043
15. R. Renugadevi, T. Venkatachalam, R. Narayanasamy, S. Prabahar, P. Krishnamurthi, *Rasayan Journal of Chemistry*, **9**, 2 (2016)
16. Y.Jiaguo, Z.Xiujian, Z.Qingnan, *Material Chemistry and Physics*,**69**,25 (2001)DOI: https://doi.org/10.1016/S0254-0584(00)00291-1
17. I.Gómez-Varela, Y.Castro, A.Durán, P. A.De Beule, M. T.Flores-Arias, C.Bao-Varela, *Thin Solid Films*,**583**,115 (2015)DOI: 10.1016/j.tsf.2015.03.028
18. J.J.Wu, S.C.Liu, *Advanced materials*, **3**, 215 (2002)DOI: https://doi.org/10.1002/1521-4095(20020205)14:3<215::AID-ADMA215>3.0.CO;2-J
19. H.Dong-Gen, L.Shi-Jun, L.Jun-Min, D.Zhi, L.Petrik, *Journal Photochemical Photobiology A Chemical,***184**, 282 (2006)DOI: https://doi.org/10.1016/j.jphotochem.2006.04.041
20. Z.Jiao, M.Tsutomu, Z. Li., Z.Miao, G. Gunawan, N.Mamiko, M.Guijun, H.Takashi, K.Masao, I.Shigeru, S.Naoya, Y.Taro, D.Kazunari, *AngewandteChemie,* **53,** 11808 (2014)DOI: https://doi.org/10.1002/anie.201406483
21. L. Zhaoyang, D. S. Darren, G. Peng, O. L. James, *Chemical European Journal,* **13,** 1851 (2007)DOI: https://doi.org/10.1002/chem.200601092
22. V. Kondalkar, S. Mali, N. Pawar, R. Mane, S. Choudhury, C. Hong, P. Patil, S. Patil, P. Bhosale, J. Kim, *Electrochemical Acta,* **143,**89 (2014)DOI: 10.1016/j.electacta.2014.07.149
23. A. M. E. Raj, V. Agnes, V. B. Jothy, C. Sanjeeviraja, *Material Science Semiconductor Processing,* **13,**389 (2010)DOI: https://doi.org/10.1016/j.mssp.2011.05.005
24. A. Nakaruk, G. Kavei, C. Sorrell, *Material Letters,* **64**, 1365 (2010)DOI: 10.1016/j.matlet.2010.03.016
25. A. Ishii, Y.Nakamura, I. Oikawa, A. Kamegawa, H. Takamura, *Applied Surface Science,* **347,** 528 (2015)DOI: 10.1016/j.apsusc.2015.04.125
26. Y.Mizukoshi, Y.Makise, T.Shuto, J.Hu, A.Tominaga, S.Shironita*, Ultrasonic Sonochemical*, **14,** 387 (2007) DOI: 10.1016/j.ultsonch.2006.08.001
27. P. Unwiset, A. Makdee, K. C. Chanapattharapol, P. Kidkhunthod, *Journal of Physics and Chemistry of Solids*, **120** (2018) DOI: https://doi.org/10.1016/j.jpcs.2018.05.003
28. V. Krishnakumar, S. Boobas, J. Jayaprakash, M. Rajaboopathi, B. Han, M. L. Kultanen, *Journal of Material Science: Material Electronics,* **27** (2016)E.Hidayanto,H.Sutanto, S.Wibowo, M. S. Irwanto, *Solid State Phenomena*,**266**, 95 (2017) DOI: 10.4028/www.scientific.net/SSP.266.95
29. X. Yang, S. Wang, H. Sun, X. Wang, J. Lian, *Transaction of Nonferrous Metals Society of China,***25** (2015) DOI: 10.1016/S1003-6326(15)63631-7

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