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## **MIDDLE EASTERN CERAMICS UNEARTH IN KAMPUNG BARU ARCHEOLOGICAL SITE, KOTA KUALA MUDA, KEDAH, MALAYSIA**

*Kampung Baru Archeological Site is situated in Bujang Valley archaeological area and the site is in Kuala Muda, Kedah to be exact. Past excavations conducted in Bujang Valley have discovered a lot of Middle Eastern ceramics and the archaeological sites which had been found in these excavations were dated from 5<sup>th</sup> to 12<sup>th</sup> century AD. Middle Eastern ceramics had been produced in Middle East but have been found not only in Middle East but also in Africa, India, Southeast Asia, China and Japan. Most Middle Eastern ceramics found in Southeast Asia and Far East Asia are Blue-Green Glazed ceramics and the archaeological sites where these ceramics had been found usually dated from 8<sup>th</sup> to 10<sup>th</sup> century AD. Many Blue-Green Glazed ceramics are believed to be used as container to transport trade goods and finding of these ceramics can be evidence of trade with Middle Eastern countries. This study employed typological and morphological analysis on the Middle Eastern ceramic that have been discovered at this site. The results of this study found that there were 241 shards of Middle Eastern ceramic discovered in Kampung Baru site and dating for these ceramics is from 8<sup>th</sup> to 10<sup>th</sup> century AD.*

**Keywords:** *Middle Eastern ceramics, Persia, Bujang Valley, Ancient Kedah*

### **Introduction**

Middle Eastern ceramics have a long history and have many kinds. It is believed that production of ceramic in Middle East had begun in about 1500 BC.<sup>1</sup> Some shards of Middle Eastern ceramics had been found in Bujang Valley, Kota Kuala Muda, Kedah, Malaysia and most of them are Blue-Green Glazed ceramics.<sup>2</sup> These ceramics are believed to be used as container of trading goods for example Frankincense, rose water and dates, and had been found in archaeological sites in Africa, India, Southeast Asia, China and Japan. Most of these sites were dated from 8<sup>th</sup> to 10<sup>th</sup> century.<sup>3</sup> The finding of Middle Eastern ceramics was strong evidence of the trade with Middle Eastern countries at that time or any kind of relationship with these countries. For example, some

pieces of Blue-Green Glazed ceramics had been found in Nara, Japan and there is a record which tells us that a Persian man came to Japan in 8<sup>th</sup> century.<sup>4</sup> Many Blue-Green Glazed ceramics also found in Candi Kampung Baru which is considered Buddhism temple in protohistoric era of Malaysia.<sup>5</sup>

Candi Kampung Baru site is located on the bank of Muda River in Kampung Baru, Kota Kuala Muda, Kedah and the distance between this site and the Muda River is about 100 metres and the archaeological excavations that have been carried out on this site have also found various types of artifacts such as earthenware, glass, metal and other ceramics such as c'hing-pai and celadon.<sup>6</sup> It is located not far from Sungai Mas Archaeological Complex which is considered by many scholars as a centre of administration and main entrepot for Ancient Kedah since 2<sup>nd</sup> century AD until 14<sup>th</sup> century AD based on foreign sources and archaeological data.<sup>7</sup>

### Middle Eastern ceramics found in Malay Peninsula

In Malay Peninsula, there are some archaeological sites where Middle Eastern ceramics had been found. For example, Middle Eastern ceramics had been found in Kampung Sungai Mas, Pengkalan Bujang, Candi Kampung Baru and Permatang Pasir in Bujang Valley, Kedah, Malaysia and Ko Kho Khao, Laem Po, Chaiya and Yala in Southern Thailand.<sup>8</sup> Most of sites have only Blue-Green Glazed ceramics but Ko Kho Khao, Laem Po and Kampung Sungai Mas have more than that. Based on the report about ceramics found in Ko Kho Khao and Laem Po, Turquoise ware, Tin white ware, Cobalt blue ware, Yellow-enameled ware, Splashed Green on white ware and Impedes Green and white ware had been found there. These ceramics found with Chinese ceramics including Yue ware and Northern white ware dated the last century of Tang Dynasty (AD 800-900).<sup>9</sup> On the other hand, Blue-Green Glazed ceramics, splashed-sgraffito ware and glass beads made from Middle Eastern recycled broken glass<sup>11</sup> had been found in Kampung Sungai Mas<sup>10</sup> which is located near Candi Kampung Baru. A shard similar to White glaze bowl with green splashed design which had been found in Iraq also had been found in Kampung Sungai Mas (Photo 1). White glaze bowl with green splashed design found in Iraq have been dated from 9<sup>th</sup> to 10<sup>th</sup> century.<sup>12</sup>

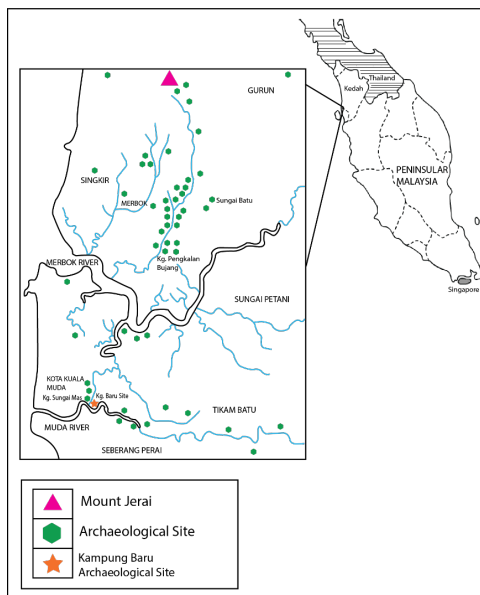


Photo 1: A Ceramic shard found in Kampung Sungai Mas site.

Most of Middle Eastern ceramics found in Bujang Valley area are Blue-Green Glazed ceramics although other kinds had been found in Sungai Mas. Blue-Green Glazed ceramics in Bujang Valley are most probably same with Blue-Green or Turquoise ware which had been found in other sites in Southeast Asia and Far East Asia including Ko Kho Khao and Laem Po. Those Blue-Green Glazed ceramics have been dated from 7<sup>th</sup> to 10<sup>th</sup> century in Malaysia.<sup>13</sup> But there is other opinion that Middle Eastern ceramics found in Bujang Valley can be dated from 11<sup>th</sup> to 12<sup>th</sup> century.<sup>14</sup> The production of Blue-Green Glazed ceramics in Middle East had been continued from era of Sasanian Empire (AD 226-651) to early Islamic era and their form, color of glaze and decoration had not been changed so much. Because of this, exact estimation of the date of these ceramics is very difficult.<sup>15</sup>

### Kampung Baru Archaeological Site

Kampung Baru site is located in southern part of Bujang Valley which is famous as centre of development of the old kingdom named Ancient Kedah which had existed in 2<sup>nd</sup> century AD until century to 14<sup>th</sup> century AD. Ancient Kedah is considered one of the most important port-kingdom in the trade between China and Western World including India and the trading centre and kingdom was established in Kampung Sungai Mas which located 3 kilometers from Candi Kampung Baru (see Map 1).



Map 1. Location of Candi Kampung Baru and other sites in Kedah

Archaeological team from Institute of the Malay World and Civilization, Universiti Kebangsaan Malaysia had excavated Candi Kampung Baru twice, in May, 2016 and February and March 2017. This team had begun excavation in the northern part of the site and found the wall made of bricks (Northern wall). The team continued the excavation following the Northern wall and found the eastern and western wall. The team also had found many artifacts which include earthenware, trade ceramics, glass wares, stone tools, iron tools, beads and shells. Earthenware is the most common artifacts in this site and many shards of trade ceramics and glass ware also had been found.<sup>16</sup> The bricks of the temple had many sizes of profiles and based on the profiles of the bricks it can be suggested that the temple was made between 10<sup>th</sup> to 11<sup>th</sup> century AD.<sup>17</sup>

Excluding earthenware, all ceramics which had been found in Candi Kampung Baru are trade ceramics from foreign countries because there had been no ceramics production excluding earthenware in Malaysia until modern era. All ceramics found in this site is a shard and there is no complete ceramic in this site. Total number of ceramics is about 1400 pieces. These ceramics are including Chinese ceramics, Southeast Asian ceramics and Middle Eastern ceramics. Almost half of ceramics found in the site are Chinese ceramics and the second largest number is Middle Eastern ceramics.

### **Middle Eastern ceramics found in Candi Kampung Baru**

Map 2 shows the trade route of the ancient trading from the west to the east. At this point of time, 241 pieces of Middle Eastern ceramic shards had been found in Candi Kampung Baru and most of them are in small pieces. The data about these shards including size, weight, colour of paste, colour of glaze, lot and layer where the shard had been found and so on was recorded and these data was analysed. The percentage of Middle Eastern ceramics to all trade ceramic found in the site is 17.7% and percentage of weight of Middle Eastern ceramics to all trade ceramic is 12.2% (1.58 kg). Table 1 is indicating the number of ceramic shards found in each lot and each layer of the site. The biggest number of Middle Eastern ceramic shards had been found in layer 3. On the other hand, the biggest number of all trade ceramic shards had been found in Layer 4. This is because 54 pieces of Middle Eastern ceramic shards concentrated in one Layer in one lot, that is Layer 3 in lot “arLXXXii” near the end of the east wall. Anyway, there is no big difference between the distribution of Middle Eastern ceramic shards and the distribution of all trade ceramics shards in the site.



Map 2. Trade route of the ancient trading from the west to the east.  
*Source.* Zuliskandar et al. 2017



Photo 2: Candi Kampung Baru



Photo 3: Artifacts found in Candi Kampung Baru

Table 1: The number of trade ceramics and Middle Eastern ceramics found in each lot and layer.

Lot \ Layer	all trade ceramics							Middle Eastern Ceramics									
	1	2	3	4	5	NR	Total	1	2	3	4	5	--	NR	Total		
avLXXvii		7	43	22			72			1	10	2			13		
auLXXvii		34		15			49		4		3				7		
awLXXviii		2		11	15	16	44				1	1		5	7		
avLXXviii			1	3			4										
auLXXviii		2		5	21		28										
atLXXviii		1					1										
arLXXxiii				4	3		7										
awLXXix	1	2	1	35	18		57				6	1			7		
arLXXix		1	2	4			7										
awLXXX		14		46	12		72		6		3	1			10		
arLXXX	1	1	5	5			12			1	1				2		
awLXXXi	6	3	55	15	12		91	1	2	10	2				15		
arLXXXi		5	5	7			17		2	2	2				6		
awLXXXii	1	32	19	45			97		4	3	3				10		
arLXXXii	1	1	69	10			81		1	54	4				59		
awLXXXiii				1			1										
arLXXXiii		3	29	18			50			6	1				7		
asLXXXiv	4	1	5	24			34				1				1		
arLXXXiv		7	18	36			61		3	1	6				10		
atLXXvii				76			76				13				13		
asLXXvii		1		66			67				11				11		
arLXXvii			1	72			73				8				8		
aqLXXviii		2	1	57			60				5				5		
aqLXXix				42	22	20	84				4	4	1		9		
aqLXXX		2	6	35	16	8	67		1	3	5	2	1		12		
aqLXXXi		18		40	17		84		8		4	2		2	16		
aqLXXXii		12	22				34		3	8					11		
NR							35								2		
Total	2	14	149	291	709	112	28	60	1365	1	35	98	85	11	2	9	241

NR= No record

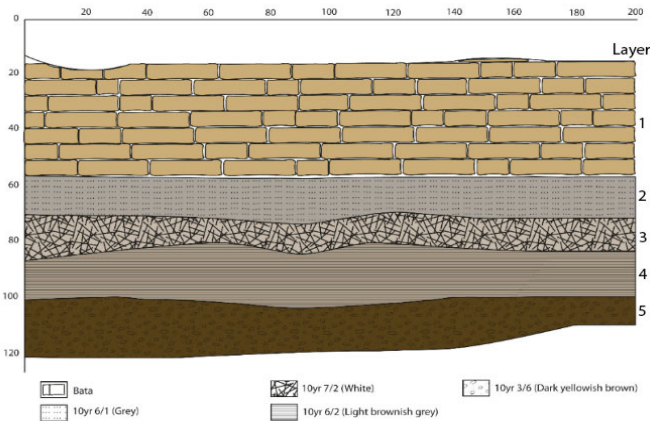


Photo 4. Stratigraphy of Candi Kampung Baru, Kedah

Almost all Middle Eastern ceramics found in Candi Kampung Baru are Blue-Green Glazed ceramics but there are a few other type ceramic shards. These shards have been categorized to Middle Eastern ceramics because the

glaze and paste of these shards is very similar to Middle Eastern ceramics originated from Iran. Furthermore, the Middle Eastern ceramics discovered at this site have been identified as stoneware. The paste of Middle Eastern ceramics found in Candi Kampung Baru can be divided to two groups based on its paste color (Photo 5). The color of Group 1 is cream and the texture is so soft that the powder comes out when it is touched. The cream color has some variation including very cream and a little bit orange cream. The color of Group 2 is orange and textures are harder than that of Group 1. The orange color has also some variation including light orange and dark orange.

Group 1 is 81 % of all Middle Eastern ceramics in Candi Kampung Baru and Group 2 is 19%. The difference of Group 1 and 2 may come from the difference of the place of production, the grade of the ceramics, the date of ceramics and so on. But distribution of these groups based on layers and colors of glaze does not have clear tendency and it is not known that what the difference of Group 1 and 2 stands for. Anyway, the paste of Group 1 looks similar to the paste of Middle Eastern ceramics found in Nara, Japan. Middle Eastern ceramics found in Nara had been dated from late 8<sup>th</sup> century to early 9<sup>th</sup> century and believed to come from southern part of Iraq.<sup>18</sup>

Most of Blue-Green Glazed Middle Eastern ceramics found in Candi Kampung Baru are small pieces and it is difficult to know original shape and use of these ceramics. But these ceramics can be divided to some groups following the difference of Blue-Green colors. 3 groups can be found. That is Dark Green (Photo 6), Bluish Green (Photo 7) and Shining Green groups (Photo 8). Dark Green is most common and 76% of the whole. The second is Bluish Green, 12% and Shining Green is 10%. The relationship between colors of glaze and layers where ceramics found is showed in Figure 1.



Photo 5: Paste of Middle Eastern ceramics: Right Group 1 and Left Group 2

There is no clear tendency in Figure 1 but it may be possible to say that Bluish Green ceramics may be older than others because the biggest number of Bluish Green ceramic shards had been found in layer 4 although the biggest number of other two groups found in layer 3.

Total of 69 pieces of Middle Eastern ceramics found in Candi Kampung Baru have some decorations on the surface. 19 pieces have ridge (Photo 9), 9 pieces have line drawing carving (Photo 10), 7 pieces have round applique (Photo 11). 4 pieces have continuous thin line with zigzags (Photo 12) and the surface of 16 pieces are waving (Photo 13). These decorations seem to be common in Middle Eastern Blue Green Glazed ceramics. Some similar decoration can be seen in Middle Eastern Blue Green Glazed ceramics from Samarra archaeological site in Iraq and Bishapur in Iran.<sup>19</sup>

Middle Eastern ceramics found in Candi Kampung Baru are including some different type shards from Blue-Green Glazed one. For example, there are light green glazed ceramics and a white color ceramic with black motif or character (Photo 14).

Figure 1: Relationship between color of glaze and layer

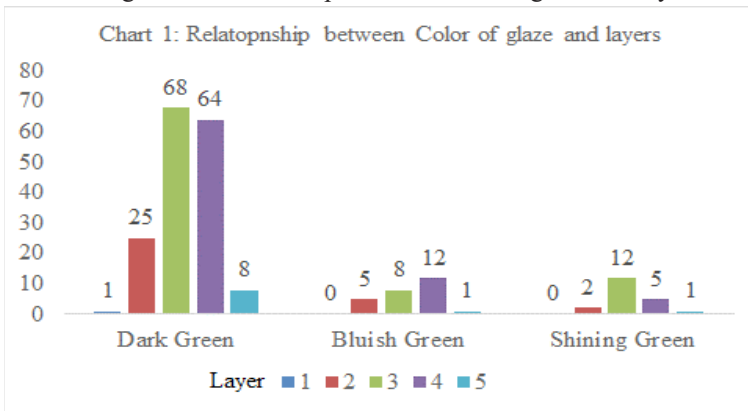


Photo 6: Dark Green ceramics





Photo 7: Bluish Green ceramics



Photo 8: Shining Green ceramics

External appearance of these ceramics is different from Blue-Green Glazed ceramics but these ceramics are categorized in Middle Eastern ceramics because the paste is very similar to Middle Eastern ceramics. Additionally, white color ceramics with black motif looks similar with bowl with black design in white ground pottery dated from 9<sup>th</sup> to 11<sup>th</sup> century. That one had been displayed in the exhibition of Fascination of Persian Ceramics in the Museum of the Middle Eastern Culture Center in Japan in 2007.<sup>20</sup>

## Conclusion

Candi Kampung Baru site has more than 200 pieces Middle Eastern ceramics and the percentage of Middle Eastern ceramics to whole trade ceramics found in the site is more than 17%. It is very high percentage compared to other sites. Most of sites have only some pieces and for example Laem Pho has 23 pieces and percentage to whole trade ceramics is only 0.77 %.<sup>21</sup> On the other hand, Kampung Sungai Mas archaeological sites which is very near to Candi Kampung Baru also have many Middle Eastern ceramics. Excavation in Kampung Sungai Mas had been taken place in 2006 and 2007 and 2564 pieces of trade ceramics including 412 pieces of Middle Eastern ceramics had been found in the site. This means 16.1% of trade ceramics found in Kampung

Sungai Mas was Middle Eastern ceramics.<sup>22</sup> This fact maybe indicates that the relationship between local society that including Kampung Sungai Mas and Candi Kampung Baru sites and merchants who had brought in these ceramics was stronger than other area. So, who brought Middle Eastern ceramics to Candi Kampung Baru? There are two possibilities. The first is Indian merchants had brought in these Middle Eastern ceramics as intermediary.<sup>23</sup> Another possibility is merchants from Middle East had brought in these ceramics. Based on Arabic records, it is said that many Middle Eastern merchants had been lived in China in 9<sup>th</sup> century but a major rebellion by Huang Chao (835 –884) happened. Many of these merchants were killed and survivors took refuge in Kedah, another trade base of Middle Eastern merchants at that time.<sup>24</sup> If this is true, many Middle Eastern merchants had been stayed in Kedah in 9<sup>th</sup> century and they may use these Middle Eastern ceramics at that time. Middle Eastern ceramics from Candi Kampung Baru and Kampung Sungai Mas have been dated from the 8<sup>th</sup> to 10<sup>th</sup> century.



Photo 9. Ridge

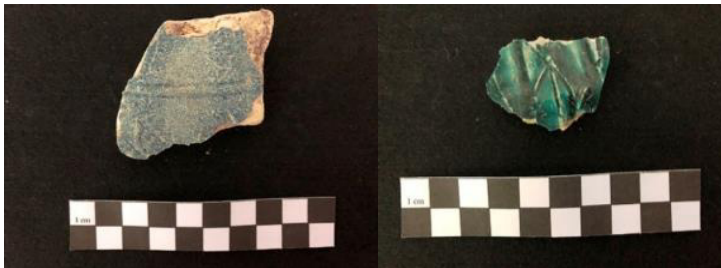


Photo 10. Line Drawing carvin

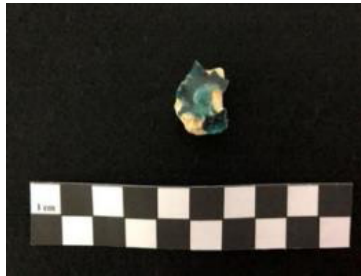


Photo 11. Round applique

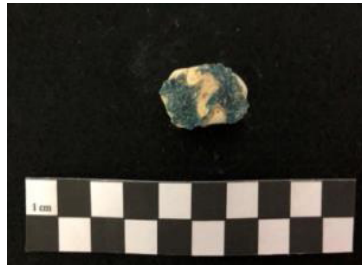


Photo 12. Line with zigzags

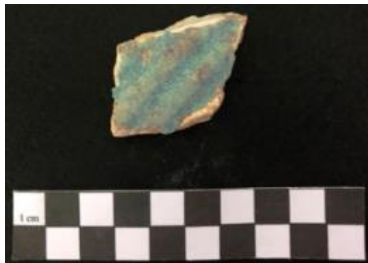


Photo 13. Waving surface



Photo 14. Middle Eastern ceramics other than Blue-Green glazed ceramics

## Endnotes

1. Takuro, A., 2007. "The beginning of the glazed ceramics in Iran". In O. Tomohiko (ed.), *Fascination of Persian Ceramics*, Tokyo: The Middle Eastern Culture Center, pp. 6-11.
2. Nik Hassan Shuhaimi Nik Abdul Rahman and Asyaari Muhamad, 2008. "Seramik Perdagangan di Lembah Bujang". In Nik Hassan Shuhaimi Nik Abdul Rahman (ed.), *Lembah Bujang dari perspektif arkeologi dan pelancongan*, Bangi: Institut Alam dan Tamadun Melayu, Universiti Kebangsaan Malaysia, pp. 210-211.
3. Tatum, S. and Hanae, S., 2011. "奈良出土青緑釉陶器瓶の産地・流通・ルート・用途・内容物・価値 (The production place, circulation, route, use, content and value of Blue-green glazed ceramics jar found in Nara)", *Bulletin of archaeology, the University of Kanazawa*, 32, 13-17.
4. Ibid.
5. Zuliskandar Ramli et al., 2018. "XRD and XRF Analysis of the ancient bricks from Candi Kampung Baru, Kedah", *Planning Malaysia*, 16(1), 314-323.
6. Muhammad Nu'man Mohd Nasir, Zuliskandar Ramli, and Zuraidah Hassan, 2017. "Analysis of pottery Typology and motif at Candi Kampung Baru, Kota Kuala Muda, Kedah", *Asian Journal of Environment, History and Heritage*, 1(1), 281-283.
7. Zuliskandar Ramli, Nik Hassan Shuhaimi Nik Abdul Rahman and Abdul Latif Samian, 2011. "X-Ray Fluorescent analysis on Indo-Pacific glass beads from Sungai Mas, Kota Kuala Muda, Kedah", *Journal of Radioanalytical and Nuclear Chemistry*, 287(3), 741-747; Nuratikah Abu Bakar, 2018. "The Development of Local Technology in Sungai Mas, Kedah from the 5th to the 10th Century AD", *International Journal of Mechanical Engineering and Technology*, 9(13), 989-997.
8. Nik Hassan Shuhaimi Nik Abdul Rahman and Asyaari Muhamad, 2008. "Seramik Perdagangan di Lembah Bujang". In Nik Hassan Shuhaimi Nik Abdul Rahman (ed.), *Lembah Bujang dari perspektif arkeologi dan pelancongan*, Bangi: Institut Alam dan Tamadun Melayu, Universiti Kebangsaan Malaysia, pp. 210-211; Muhammad Termizi Hasni, 2016. *Tapak Hunian Masyarakat Prasejarah dan Protosejarah di sepanjang Lembangan Sungai Mas*, Master of Letters, Universiti Kebangsaan Malaysia; Ho, C., 1994. "Ceramics found at excavations at Ko Kho Khao and Laem Pho, South Thailand", *Trade Ceramics Studies*, 11, 53-80.
9. Ho, C., 1991. "The Significance of West Asian ceramics in East and Southeast Asia in the 9th-10th century", *Trade Ceramics Studies*, 14,

- 35-59; Ho, C., 1994. pp. 53-80.
10. Nik Hassan Shuhaimi Nik Abdul Rahman and Asyaari Muhamad, 2008. "Seramik Perdagangan di Lembah Bujang". In Nik Hassan Shuhaimi Nik Abdul Rahman (ed.), *Lembah Bujang dari perspektif arkeologi dan pelancongan*, Bangi: Institut Alam dan Tamadun Melayu, Universiti Kebangsaan Malaysia, pp. 210-211.
  11. Nur Qahirah Abdul Rahman et al., 2019. "Elemental Analysis by Field-Emission Scanning Electron Microscope of Ancient Glass Beads Sample from Pulau Kalumpang Archeological Site, (Perak, Malaysia)", *Mediterranean Archaeology and Archaeometry*, 19(1), 93-106; Zuliskandar Ramli et al., 2017. "Compositional analysis of sungai Mas, Kuala Selinsing and Santubong glass beads", *Mediterranean Archaeology and Archaeometry*, 17(2), 117-129; Zuliskandar Ramli et al., 2018. "XRD and XRF Analysis of the ancient bricks from Candi Kampung Baru, Kedah", *Planning Malaysia*, 16(1), 314-323.
  12. Photo No. 56. In Tomohiko, O. (ed.), 2007. *Fascination of Persian Ceramics*. Tokyo: The Middle Eastern Culture Center.
  13. Nik Hassan Shuhaimi Nik Abdul Rahman and Asyaari Muhamad, 2008. "Seramik Perdagangan di Lembah Bujang". In Nik Hassan Shuhaimi Nik Abdul Rahman (ed.), *Lembah Bujang dari perspektif arkeologi dan pelancongan*, Bangi: Institut Alam dan Tamadun Melayu, Universiti Kebangsaan Malaysia, pp. 210-211.
  14. Allen, J., 1988. *Trade, Transportation, and Tributaries: Exchange, Agriculture, and Settlement Distribution in Early Historic-Period Kedah, Malaysia*. PhD Thesis. Hawaii: University of Hawaii.
  15. Kamelia Najafi Enferadi & Nik Hassan Shuhaimi Nik Abd. Rahman, 2011. "Persian Ceramic in the Bujang Valley", *Jurnal Arkeologi Malaysia*, 24, pp. 132-145.
  16. Zuliskandar Ramli et al., 2018. "XRD and XRF Analysis of the ancient bricks from Candi Kampung Baru, Kedah", *Planning Malaysia*, 16(1), 314-323.
  17. *Ibid.*
  18. Tatuo, S. and Hanae, S., 2011. pp. 13-17.
  19. Tatuo, S., 1995. "Classification of ceramics found at Samarra 1911-1913", *Bulletin of archaeology, the University of Kanazawa*, 22, 75-165; Yamamoto, N., 2002. "Trade and Islamic Ceramics in Japan and Southeast Asia in the Ninth and the Tenth Centuries", *Bulletin of the National Museum of Japanese History*, 94, 85-144.
  20. Photo No. 92-96. In Tomohiko, O. (ed.), 2007. *Fascination of Persian Ceramics*. Tokyo: The Middle Eastern Culture Center.
  21. Ho., 1991. pp. 53-80 and 1994. pp. 35-59
  22. Farhana Abdullah, 2013. *Kepelbagaian Jenis Seramik di Tapak*

*Arkeologi Sungai Mas, Kota Kuala Muda Kedah*, Master of Letters, Universiti Kebangsaan Malaysia.

23. Ho, C., 1994. pp. 53-80.
24. Fukami, S., 2001. “マラッカ海峡交易世界の変遷” (Transition of trade world in Malacca Strait), *History of Southeast Asia*, 1, pp. 255-283.

## References

- Allen, J., 1988. *Trade, Transportation, and Tributaries: Exchange, Agriculture, and Settlement Distribution in Early Historic-Period Kedah, Malaysia*. PhD Thesis. Hawaii: University of Hawaii.
- Farhana Abdullah, 2013. *Kepelbagaian Jenis Seramik di Tapak Arkeologi Sungai Mas, Kota Kuala Muda Kedah*, Master of Letters, Universiti Kebangsaan Malaysia.
- Fukami, S., 2001. “マラッカ海峡交易世界の変遷” (Transition of trade world in Malacca Strait), *History of Southeast Asia*, 1, pp. 255-283.
- Ho, C., 1991. “Ceramics found at excavations at Ko Kho Khao and Laem Pho, South Thailand”, *Trade Ceramics Studies*, 11, 53-80.
- Ho, C., 1994. “The Significance of West Asian ceramics in East and Southeast Asia in the 9th-10th century”, *Trade Ceramics Studies*, 14, 35-59.
- Kamelia Najafi Enferadi and Nik Hassan Shuhaimi Nik Abd. Rahman, 2011. “Persian Ceramic in the Bujang Valley”, *Jurnal Arkeologi Malaysia*, 24, pp. 132-145.
- Muhammad Nu'man Mohd Nasir, Zuliskandar Ramli, and Zuraidah Hassan, 2017. “Analysis of pottery Typology and motif at Candi Kampung Baru, Kota Kuala Muda, Kedah”, *Asian Journal of Environment, History and Heritage*, 1(1), 281-283.
- Muhammad Termizi Hasni, 2016. *Tapak Hunian Masyarakat Prasejarah dan Protosejarah di sepanjang Lembangan Sungai Mas*, Master of Letters, Universiti Kebangsaan Malaysia.
- Nik Hassan Shuhaimi Nik Abdul Rahman and Asyaari Muhamad, 2008. “Seramik Perdagangan di Lembah Bujang”. In Nik Hassan Shuhaimi Nik Abdul Rahman (ed.), *Lembah Bujang dari perspektif arkeologi dan pelancongan*, Bangi: Institut Alam dan Tamadun Melayu, Universiti Kebangsaan Malaysia, pp. 210-211.
- Nuratikah Abu Bakar, Zuliskandar Ramli, Muhammad Nu'man Mohd Nasir, Mohd Shamsul Bahari Abd Hadi and Siti Salina Masdey, 2018. “The Development of Local Technology in Sungai Mas, Kedah from the 5<sup>th</sup> to the 10<sup>th</sup> Century AD”, *International Journal of Mechanical Engineering and Technology*, 9(13), 989-997.
- Nur Qahirah Abdul Rahman, Zuliskandar Ramli, Azimah Hussin, Muhamamad Nu'man Mohd Nasir, Nur Sarahah Mohd Supian, Hossein Sarhaddi

- Dadian, 2019. "Elemental Analysis by Field-Emission Scanning Electron Microscope of Ancient Glass Beads Sample from Pulau Kalumpang Archeological Site, (Perak, Malaysia)", *Mediterranean Archaeology and Archaeometry*, 19(1), 93-106.
- Takuro, A., 2007. "The beginning of the glazed ceramics in Iran". In O. Tomohiko (ed.), *Fascination of Persian Ceramics*, Tokyo: The Middle Eastern Culture Center, pp. 6-11.
- Tatuo, S. and Hanae, S., 2011. "奈良出土青緑釉陶器瓶の産地・流通・ルート・用途・内容物・価値" (The production place, circulation, route, use, content and value of Blue-green glazed ceramics jar found in Nara), *Bulletin of archaeology, the University of Kanazawa*, 32, 13-17.
- Tatuo, S., 1995. "Classification of ceramics found at Samarra 1911-1913", *Bulletin of archaeology, the University of Kanazawa*, 22, 75-165. *Mediterranean Archaeology and Archaeometry*, 19(1), 93-106.
- Tomohiko, O. (ed.), 2007. *Fascination of Persian Ceramics*. Tokyo: The Middle Eastern Culture Center.
- Yamamoto, N., 2002. "Trade and Islamic Ceramics in Japan and Southeast Asia in the Ninth and the Tenth Centuries", *Bulletin of the National Museum of Japanese History*, 94, 85-144.
- Zuliskandar Ramli, Nik Hassan Shuhaimi Nik Abdul Rahman and Abdul Latif Samian, 2011. "X-Ray Fluorescent analysis on Indo-Pacific glass beads from Sungai Mas, Kota Kuala Muda, Kedah", *Journal of Radioanalytical and Nuclear Chemistry*, 287(3), 741-747
- Zuliskandar Ramli, Nur Qahirah Abdul Rahman, Azimah Hussin, Sharifah Nur Izzati Sayed Hasan, Azharudin Mohamed Dali, 2017. "Compositional analysis of sungai Mas, Kuala Selinsing and Santubong glass beads", *Mediterranean Archaeology and Archaeometry*, 17(2), 117-129.
- Zuliskandar Ramli, Muhammad Nu'man Mohd Nasir, Abdul Latif Samian, Nor Zalina Harun, Mohd Shamsul Bahari Abdul Hadi, Nuratikah Abu Bakar and Nur Sarahah Mohd Supian, 2018. "XRD and XRF Analysis of the ancient bricks from Candi Kampung Baru, Kedah", *Planning Malaysia*, 16(1), 314-323.

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