

RESEARCH@UCSI

CENTRE OF EXCELLENCE FOR RESEARCH, VALUE INNOVATION AND ENTREPRENEURSHIP

OFFICE OF POSTGRADUATE STUDIES



e-ISSN: 2710-7256

AUGUST 2023 Vol.5 No.4

Scrumptious Peranakan Recipes: A Taste of History and Culture



Asst. Prof. Loke Hoi Weng is a Chef Lecturer with years of experience in Asian cuisine production. His passion in culinary is the key fuel to motivating his continuous innovation in the field of culinary while retaining the original flavours of the dishes.



Asst. Prof. Dr. Leong Quee Ling has research interests in gastronomy tourism and Malaysian food. She has published research articles and book chapters about Malaysian food besides presenting her work in both national and international conferences.

The terms Peranakan Chinese, the Straits Chinese, and the Babas and Nyonyas are commonly used interchangeably to identify the descendants of strait Malays with their spouse from mainland China who migrated to Malay Peninsula during the 15th to 17th century (Tan, 1993). Despite the hybridity, the Malay and Chinese culture remain strong in the Peranakan food culture. Common ingredients used in Peranakan cuisine are such as belachan (shrimp paste), buah keras (candlenuts), gula Melaka (palm sugar), tamarind, turmeric, galangal, serai (lemongrass), chilli, star anise, cinnamon, cardamom, cloves, pandan leaves, daun limau purut (kaffir lime leaves) and etc. These ingredients are used to concoct the unique Peranakan cuisine that are usually dominated with spicy and piquant flavours. Here, we would like to share several simple, yet mouth-watering Peranakan dishes that you may try cooking at home: Inchi Kabin, Nyonya Hu Pioh T'ng, and Onde Onde. Each recipe yields four portions.



Inchi Kabin

From passed-down stories by the older generations, the peculiar yet unique name of the dish was possibly derived when the cook in the ship calling out to the sailors in the cabin, "Encik dalam kabin... makanan sudah siap" (Mister in the cabin... food is ready) when the chicken meal was ready, and hence Inchi Kabin. The dish is basically a twice-fried chicken, marinated with myriad of spices and Worcestershire sauce. It is a favourite finger food that is easy to prepare.

Ingredients	Unit	Remarks	
Chicken whole leg	400 gm	Cut into pieces	
Oil for deep frying	As needed		
Seasoning			
Curry Powder	2 ½ tbsp		
Salt	1 tsp		
Cocounut Milk	100ml		
Dipping Sauce			
Red Chilli	1 nos	Seeded and cut into strips	
Calamansi Juice	2 nos		
Sugar	1 tsp		
Dry Mustard	1 tsp		
Worcester sauce	3 tbsp		

Sucsi University

Preparation methods

- 1. Marinate the chicken with the seasonings for at least 4 hours, or best overnight.
- 2. In a frying pan, deep fry the seasoned chicken until ¾ cooked and leave to cool on paper towels.
- 3. Reheat the oil until it is hot and deep fry again for approximately 30 seconds to 1 minute or until it is crisp and golden brown.
- 4. Remove the fried chicken from the pan and drain on paper towels.
- 5. Mix the dipping sauce in a small bowl to serve with the fried chicken.



Nyonya Hu Pioh T'ng

Hu Pioh is fish maw, while T'ng is soup in Hokkien language. In culinary, fish maw is basically the inflatable bladder of large fish. Despite being not seemingly a popular fish product to many, it is an exceptional delicacy to the Peranakans due to fish maw is a good source of collagen. Its spongy texture and great flavor absorption nature makes it an excellent ingredient for soup.

Ingredients	Unit	Remarks	
Fried hu pioh (fish maw)	20 gm		
Chicken stock	600 ml	Pre-prepared	
Fish ball	4 nos		
Chinese cabbage	60 gm	Cut into pieces	
Chinese parsley	Amount to preference	Use as garnishing	
Crisp-fried shallots	Amount to preference	Use as garnishing and to add flavor	
Carrots	40 gm		
Pepper	To taste		
Salt	To taste		
Sugar	To taste		
Fish cake	8 slices		

Preparation methods

- 1. Scald fish maw with boiling water, squeeze out water, cut into small pieces.
- 2. Place everything into a stock pot except Chinese parsley and crisp-fried shallot.
- **3.**Bring to a boil and simmer for 25 minutes.
- 4. Correct seasoning according to taste.
- 5. Garnish with Chinese parsley and crisp-fried shallot.

Onde Onde

Green-coloured round-shaped balls filled with gula Melaka (palm sugar) in the core and rolled with freshly grated coconut is a sweet delicacy called Onde Onde. It is a popular kuih (sweet cake) among the Peranakans in Malaysia. Through years of continuous research and recipe innovation, Chef Loke found the 'golden' ratio to making soft and bouncy Onde Onde with the addition of sweet potato. The sweet potato enhances the taste of Onde Onde when combines with the unique sweetness of palm sugar. Besides, sweet potato is a good ingredient in retaining moisture, hence making it softer in texture.



Nyonya Hu Pioh T'ng



Ingredients	Unit	Remarks	
Sweet potato	100 gm	Weight after peeled	
Glutinous rice flour	120 gm		
Warm water	100 ml	Used to blend with pandan leaves	
Sugar	1 tbsp		
Green colouring	A drop	If needed for greener color Blend with warm water for juice To be wrapped into dough	
Pandan leaves	Amount to preference		
Gula Melaka	Amount to preference		
Freshly grated coconut	Amount to preference	For coating	

Preparation methods

- 1. Cut sweet potato into cubes.
- 2. Boil potato until soft.
- 3. Strain and mix with glutinous rice flour and sugar in a mixing bowl.
- **4.**Pour warm pandan juice (and green colouring if needed) into glutinous rice flour and mix well to form dough.
- 5. Divide dough into small pieces and shape to a round-ball.
- 6. Make a hole and stuffed in gula Melaka.
- 7. Cook the balls filled with palm sugar in boiling hot water until it floats up.8. Removed with strainer and coat with freshly grated coconut.

References

Tan, C. B. (1993). Chinese Peranakan heritage in Malaysia and Singapore. Kuala Lumpur: Fajar Bakti.



Paw's Eden Project by SABE

UCSI School of Architecture and Built Environment's student led research and innovation organisation - colllab successfully completed Paw's Eden project. This outstanding initiative has also been recognized as the 1st runner-up winner of the Projects for Happiness 2022 by My Starfish Foundation. The team was composed of students from different years of architecture and interior architecture who took on leadership roles namely Joanne Chan Wen Hui, Rocano Hadyancia, Lim Ke Zhen and Anson Yap Jien Yong. Throughout the project, which spanned from May 2022 to January 2023, the students led and managed a team of over twenty student volunteers.

The project aims to add value to our community partner, C.A.S.H Animal Shelter, by designing a sustainable and innovative bamboo dog playhouse and setting up a system for a customisable flatpack dog wheelchairs based on the founder's design. The project received a total funding of MYR 11,000 (MYR 8,000 from My Starfish Foundation and another remaining MYR 3,000 from crowdfunding on social media). The project provided undergraduate students with hands-on experience in the full construction process. The team also compiled an extensive research based on the founder's innovative design into a DIY dog wheelchair flatpack kit that includes pre-cut materials and a handbook for easy assembly. The project's goal is to positively impact the community and help more dogs in need.

The team was split into two teams, one half of the team -Goodwheel for All and the other half - Bamboo Playhouse. Goodwheel for All team embarked on a comprehensive project to improve wheelchair accessibility. The team began by analyzing an existing wheelchair obtained from the animal shelter. The team disassembled it to examine the framework, identifying areas for improvement. Using the findings, the team successfully replicated the wheelchair, documenting the challenges and procedures in a drafted handbook. This handbook was then refined by the team led by Rocano, supplemented with a tutorial video. Two freshmen were given the handbook to replicate the wheelchair, with the process closely monitored and documented. Once finalized, the handbook was passed on to two more freshmen for further testing and monitoring. Additionally, the team arranged several visits to the animal shelter, where various activities were conducted, such as testing the prototype on a dog, conducting dog studies, and providing the founder with the flatpack and handbook. The project also involved external testing, where the team reached out to a dog owner in need of a wheelchair, providing them with a tailored flatpack and receiving a testimonial review.



Meanwhile, the other half of the team worked on the Bamboo Playhouse project which presented its own set of challenges. As students unfamiliar with actual construction, they faced difficulties in translating their design drawings into a tangible structure. Compromises had to be made regarding the design, materials, timeline, and sponsorships. Additionally, recruiting volunteers became problematic due to the timing, as most of the students had already gone on holiday. This project proved to be one of the most challenging endeavors undertaken by the students, as it involved designing for a different user group and working with bamboo—a natural material that required skilled craftsmanship and could not be quickly fabricated. Despite these obstacles, the team persevered and undertook the construction themselves successfully.



CinnaFresh an Innovating Bio-Based Active Food Packaging

Siew Zhi Zhou a student from Faculty of Applied Sciences undertaking Doctor of Philosophy (Science). He was under the supervision of Assoc. Prof. Dr. Wong Chen Wai and Assoc. Prof. Dr. Eric Chan Wei Chiang. Zhi Zhou developed an innovative biodegradable packaging, CinnaFresh that can deliver fungal and browning inhibitors on to the surface of food where they are most needed. This reduces the amount of inhibitors required to extend shelf-life and reduce food wastage.

For his innovative green packaging, the team was awarded the silver medal under materials category at 34th International Invention, Innovation & Technology Exhibition (ITEX 2023) which was held at Kuala Lumpur Convention Centre, Malaysia on 11 and 12 May 2023. ITEX is a well-known platform attended by academics, entrepreneurs and venture capitalists. Winning the award is a testament to their innovation and passion for sustainable technologies.

Their innovation was also evaluated at the 9th International Biotechnology Competition & Exhibition (IBCEX) on 5 and 6 May 2023. IBCEX is another platform which evaluates green and sustainable innovation organized annually by Universiti Teknologi Malaysia and is attended by postgraduate and undergraduate research students from different countries. Here their product performed admirably securing the Gold Award for the year. Innovations developed at UCSI University were well matched against those of Malaysian and foreign universities.

Extending shelf life, reducing food waste and improving food safety are important priorities which fulfils sustainable development goals (SDG) no. 3, 9 and 12. The team is presently reaching out to investors to bring the technology to market.



Team photo (From left to right): Assoc. Prof. Dr Eric Chan Wei Chiang, Siew Zhi Zhou and Assoc. Prof. Dr Wong Chen Wai.



Siew Zhi Zhou (Right) was explaining the invention to potential investors at ITEX 2023



Award presentation ceremony (From left to right): Assoc. Prof. Dr Wong Chen Wai and Siew Zhi Zhou.



Winning the gold award at IBCEX 2023



The judging process at ITEX 2023



The first judging panel at IBCEX 2023



The second judging panel at IBCEX 2023



Get To Know Who Exactly The Quantity Surveyor (QS)

Prepared by Ts. Sr Khoo Sui Lai & Ts. Sr Dr. Nadzirah Hj. Zainordin School of Architecture & Built Environment, UCSI University



Ts. Sr Khoo Sui Lai

Graduated with Bachelor of Building in Construction Economics from University of Technology, Sydney (UTS), now pursuing his Ph.D (Engineering) with Universiti Tunku Abdul Rahman (UTAR). Receiving his Consultant Quantity Surveyor (CQS) with Board of Quantity Surveyors Malaysia (BQSM), fellow member of Royal Institution of Surveyor Malaysia (RISM) and a Chartered Surveyor with Royal Institution of Chartered Surveyors (RICS). He is also Professional Technologist (Ts) with the Malaysia Board of Technologist (MBOT). Currently as lecturer in UCSI University for Quantity Surveying programme. Furthermore, he actively participated in research, published research papers, won local/ international invention awards, and leads/ corresearcher for few research grants. His esearch interest is digital construction, economics, and sustainable development in the construction industry. He also actively participates with professional bodies at national and international level.



Ts. Sr Dr. Nadzirah Hj. Zainordin

Graduated with Degree in QS from International University College of Technology Twintech, then pursuing his Master Degree in QS with Heriot Watt University. Her Ph.D from Universiti Teknologi Malaysia. Receiving her registered or professional surveyor status at very a young age, she is professional surveyor with Board of QS Malaysia (BQSM), Royal Institution of Surveyor Malaysia (RISM) and a Chartered Surveyor with the UK Royal Institution of Chartered Surveyors (RICS). She is also amongst the earliest pioneer of Professional technologist (Ts) with the Malaysia Board of Technologist (MBOT). Served one of the top private university in Malaysia UCSI University as Head of Quantity Surveying programme. In addition, she actively participated in research, published more than 100 research papers, wins local/ international invention awards, and leads/ co-researcher more than 20 research grants. Recently she is awarded as International Scholar Young Researcher and Outstanding Teaching Award at international level. Her research interest is on sustainable and resilient development, practices in Higher Education Institutions and construction industry. She also actively participates with professional bodies national and international level.

Who is Quantity Surveyor (QS)?

Coming across to mind who its this fella? Who are they? Are they a types of profession? Oh, nah the Quantity Surveyor or also known as QS it's a person who work in construction industry. But what they do? Do we really need QS? Some of typical question always come-out from a layman people. People always been confused between QS with Lad Surveyor (LS). Where they always though QS it's the one who bring that 'big-camera' (read: theodolite) all over the place to capture the snapshot of the road length. Unlike others profession in construction industry like Architect and Civil Engineer, it's well known and easily to define who are they. Architect the one designing the shape of the building. Civil Engineer doing structural designing and contractor materialise the ideas.

Let's answering Who is Quantity Surveyor (QS)? The snippets of him, he is a person who involve along the way in construction project, humbly seating down among the construction players, well, having powerful influencing the entire decision, perhaps it's should be as glamour as other profession but they are not. Why? Too humble yet powerful person to in charge along the way.

QS play roles as construction project accountant and also an attorney to solve the disputes. QS doing estimation of entire construction project cost by abstracting out the information feed by Architects and Engineers, suggesting the competitive budget to project owner, crafting the construction contract documentation, administer the documentation and project flow parallel with the financial flow, one of the expert advisor to advice the best procurement and an adjudicator to solve the dispute. We may foresee that the involvement of QS are importance along the way the construction project but yet they are too humble to be well-known.



Quantity Surveyors Act 1967

According to the Quantity Surveyors Act 1967, Quantity Surveyors can be define as a qualified professionals (registered under Board of Quantity Surveyors Malaysia (BQSM) as Professional or Consultant QS) who staying and practising in Malaysia in:

- Preparing, for construction projects, any feasibility study reports, preliminary estimates, cost plans, documents and reports for prequalification of contractors, bills of quantities and other tender documents, tender estimates and reports, contract documents and valuations of works for interim payments, variation and final account; and
- Providing professional services such as project cost management, value management, risk management, facilities management, project management, construction management, construction claims management, dispute resolution services, technical and construction cost auditing, and condition survey.

Quantity Surveyor Professional Services

QS is a certified and well-trained construction professional who can provide guidance on all facets of construction costs, financial management, and contractual administration. Act as an expert in cost management of building, civil or heavy engineering projects, including homes, commercial real estate developments, hospitals, mosques, educational institutions, petrochemical facilities, motorways, dams, and airports, among others. Prior to that, QS was also involved in banking, insurance, claims, alternative dispute resolution (ADR), interior design, Building Information Modelling (BIM), and other fields. In Malaysia, as recorded by the Royal Institution of Surveyors Malaysia (RISM), there are currently about 1700 trained quantity surveyors and another 2000 or so graduate professionals.

Every time a construction project is suggested, it's crucial to have an idea of how much it will cost. In addition to the lifespan costs for the new facility, these expenses cover site preparation, labour, material, and plant costs, professional fees, taxes, and other expenses. The QS is qualified to assess these expenses and offer advice on substitute proposals. When a client decides to build, the QS offers advice on the best contract and legal framework for the building's construction.

QS provides the design consultants with cost implications advice while speaking on the client's behalf. This covers the various construction techniques, alternate material selections, project size, and project quality. Additionally, by doing this, you can make sure that each component agrees with the cost plan allowed and that the overall project cost stays within your budget. With these abilities, quantity surveyors are well-equipped to assume a leadership managerial position over the course of a project. For instance, they can give the client precise budget and time estimates and examine the effects of changes in design, site circumstances, and working arrangements. Regarding private practise, government sectors, educational institutions, construction firms, real estate developers, banks and other financial institutions, industrial companies, and other commercial companies, quantity surveyors can work in a few settings. Their abilities in the workplace are highly valued, and they frequently advance to top managerial positions.

Professional Services

The services provided by the QS can be categorised as: The scope of basic service is outlined as follows:



- Preparation of preliminary cost estimates of the project.
- Advise on cost estimates in relation to design development of a project.
- Advise on procurement, tendering and contractual procedures and arrangement.
- Preparation of the Bill of Quantities or Specification document for tendering purposes.
- Organise the tender calling.
- Evaluation of tenders received in the tender reports.
- Preparation and execution of the contract.
- Interim valuation and progress payments.
- Preparation of financial statement of regular intervals during the construction period.
- Settlement of the final accounts of the project.

The supplementary services may also be provided by the QS if required:

- Preparation of feasibility studies of a project.
- Projection of estimated project or development expenditure and anticipated income cash flows.
- Evaluation of contractors during prequalification.
- Comparative cost studies on the economics of the project.
- Project management of construction project.
- Lifecycle costing and studies on economics of alternative designs.
- Pricing of Bills of Quantities or negotiating and agreeing Schedule of Rates.
- Valuation or auditing of contractual claims for arbitrations litigation cases.
- Valuation or auditing of insurance claims for fire damaged buildings.
- Auditing of contracts, budgets, and expenditure.
- Application of the full scope of quantity surveying services in Turnkey or Privatisation Contracts.

Quantity Surveyor Professional Prefix

As a Professional Quantity Surveyor registered under the Board of Quantity Surveyors Malaysia (BQSM) may bring the post-fix at the back of the name. There are two categories of professional registration under BQSM which are Professional Quantity Surveyor (PQS) and Consultant Quantity Surveyor (CQS). The highest registration with BQSM are CQS which the holder may become the owner of the consultant QS firm. For full member registered with the Royal Institution of Surveyors Malaysia (RISM) may bring the prefix of 'Sr' at the front of the name and postfix of MRISM which stand for Member of RISM or FRISM which stand for Fellow of RISM. The highest membership rank are FRISM. The example as below:

Sr Khoo Sui Lai, CQS, FRISM

Abbreviation:

Sr: Surveyor – given by RISM

CQS: Consultant Quantity Surveyor – given by BQSM

FRISM: Fellow of Royal Institution of Surveyor Malaysia – given by RISM

References

1.Board of Quantity Surveyors Malaysia (BQSM) **www.bqsm.gov.my** 2.Royal Institution of Surveyors Malaysia (RISM) **www.rism.org.my**

Factual Or Fake Information? The Necessity Of Media And Information Literacy (MIL) Training And Research

Misinformation refers to inaccurate information that is disseminated and unintentionally causes harm to society (Van der Meer & Jin, 2019). In contrast, disinformation is a form of news or information that is intentionally and demonstrably false, potentially leading to deception among its audience (Levi, 2018). According to Adams et al. (2023), malinformation refers to information that is disseminated to cause harm to an individual, organisation, or country. To summarise, the concept of fake news encompasses both misinformation and disinformation, while factual news may include instances of malinformation. As Adam et al. (2023) stated, two primary distinctions exist between misinformation and disinformation. Firstly, fake news imitates the structure of mainstream news, whereas disinformation does not. Secondly, while disinformation is intentionally created to deceive, misinformation is unintentionally created to deceive, as the individual sharing it is unaware of the falsity or fabrication of the information being disseminated. The challenge of information disorder is a ubiquitous phenomenon that affects all types of media. The challenges of managing undesired material are exacerbated in the realm of digital media, particularly on social media platforms. This is due to the ease of access and usage, the rapid dissemination of information, and the complexities involved in correcting erroneous information (Muhammed & Mathew, 2022).

Contemporary technological advancements facilitate the media in expediting the processing and dissemination of information and news to its audience; however, the act of manipulating the media has the potential to result in a decline in trust towards the mainstream media, an increase in dissemination of false information, and a heightened degree of radicalisation. There are apprehensions regarding the ramifications of disinformation, including the erosion of confidence in the media, the dubious reliability of sources, and the indistinct differentiation between authentic and fabricated news (Steensen, 2019). As noted by Dame Adjin-Tettey (2022), it is imperative to exercise caution when judging and forming opinions based on disinformation, as such actions may lead to catastrophic consequences. For instance, Ms Jocelyn Chia, a comedian from the United States, commented in a widely viewed video that caused Malaysian authorities to express outrage. The comment in question was a joke about the missing aircraft MH370. Ms Chia believes that the government's response to her joke was excessive and resulted in significant international controversy. Information disorder can inflict harm upon society through its potential to undermine democratic processes, diminish trust, skew public discourse, and impair the quality of public debate. Despite the availability of substantial evidence suggesting that the frequency and impact of information disorder are frequently exaggerated, there is a persistent prevalence of alarmist narratives surrounding this matter, particularly in Malaysia.

To effectively overcome the challenges posed by information disorder, it is essential to adopt a comprehensive approach incorporating diverse strategies and initiatives. Potential strategies to address the issue of misinformation could include initiatives aimed at enhancing public media literacy, implementation of fact-checking campaigns, advocacy for responsible journalistic practices, and enforcing platform standards that prioritise transparency, accountability, and dissemination of precise information. For example, the Asia Centre is leading an initiative to combat information disorder in Malaysia by implementing a Media and Information Literacy (MIL) Training programme for Master Trainers. This effort is commendable. The workshop is a groundbreaking element of the "ASEAN Digital Literacy Programme (ADLP)," founded through a partnership between Google and the ASEAN Foundation. The primary aim of this initiative is to cultivate resilience against misinformation within marginalised communities in Malaysia, as stated by the Asia Centre in 2022.



Dr Hiew Lee Chea, Lecturer Faculty of Business and Management, UCSI University, Sarawak Campus.

Articles peer-reviewer for:

 Journal of Applied Social Psychology (JASP);
Borneo Journal of Social, Sciences & Humanities (BJSSH)



Jap Kouk Ping, Lecturer Faculty of Business and Management, UCSI University, Sarawak Campus.



Tan Sze Leng, Lecturer Centre of Pre-U Studies, UCSI University, Sarawak Campus.



On 11 March 2023, UCSI University representatives from the Sarawak campus (i.e., Dr Hiew Lee Chea, Mr Jap Kouk Ping, and Ms Tan Sze Ling) were allowed to participate in the Asia Centre training. Through their active involvement, they acquired invaluable perspectives on media and information literacy and refined their abilities to navigate the complex media environment, evaluate information with a discerning mindset, and arrive at informed conclusions. In addition, the UCSI University representatives from the Sarawak campus offered training sessions to the end beneficiaries on 6 May 2023 and 26 May 2023 (Please refer to Figures 1 and 2 for specific details). These sessions aimed to provide individuals with the necessary tools and knowledge to navigate the complexities of the media ecosystem proficiently. They aimed to empower individuals to differentiate between reliable information and misinformation or disinformation by improving their media literacy skills.

The importance of Media and Information Literacy (MIL) Training cannot be overstated, and it is necessary to conduct research related to information disorders and establish a media and information literacy index. Research related to information disorders and establishing a media and information literacy index can facilitate scholarly inquiry and expert analysis of the complexities surrounding the phenomenon of information disorder and the subsequent implications that arise from it. Emphasising the possible detriments and adverse consequences may dissuade the proliferation of misinformation and foster conscientious information consumption and propagation.

References

Adams, Z., Osman, M., Bechlivanidis, C., & Meder, B. (2023). (Why) Is Misinformation a Problem? Perspectives on Psychological Science, 174569162211413. <u>https://doi.org/10.1177/17456916221141344</u>

Anderau, G. (2021). Defining Fake News. KRITERION – Journal of Philosophy, 35(3), 197–215. <u>https://doi.org/10.1515/krt-2021-0019</u>

Asia Centre Kicks-off Media and Information Literacy (MIL) Trainings in Malaysia. (2022, 2 December). Asia Centre. Retrieved 16 June, 2023, from <u>https://asiacentre.org/asia-centre-kicks-off-media-and-information-literacy-mil-trainings-in-malaysia/</u>

Dame Adjin-Tettey, T. (2022). Combating fake news, disinformation, and misinformation: Experimental evidence for media literacy education. Cogent Arts & Humanities, 9(1). <u>https://doi.org/10.1080/23311983.2022.2037229</u>







MIL Training to UCSI University's Students on 26 May 2023

Levi, L. (2018). Real "fake news" and fake "fake news." First Amendment Law Review, 16, 232.

Muhammed T, S., & Mathew, S. K. (2022). The disaster of misinformation: a review of research in social media. International Journal of Data Science and Analytics, 13(4), 271–285. <u>https://doi.org/10.1007/s41060-022-00311-6</u>

Steensen, S. (2018). Journalism's epistemic crisis and its solution: Disinformation, datafication and source criticism. Journalism, 20(1), 185–189. <u>https://doi.org/10.1177/1464884918809271</u>

van der Meer, T. G. L. A., & Jin, Y. (2019). Seeking Formula for Misinformation Treatment in Public Health Crises: The Effects of Corrective Information Type and Source. Health Communication, 35(5), 560–575. <u>https://doi.org/10.1080/10410236.2019.1573295</u>



The Discovery of "Brine Prong" and "Oil Vortex" Effects: Unveiling the Gist of Smart Water Technology

Prepared By Dr. Vahid Khosravi Post-Doctoral Research Fellow, Chemical & Petroleum Engineering Department, Faculty of Engineering, Technology and Built Environment (FETBE), UCSI University, Kuala Lumpur, Malaysia



Dr. Vahid Khosravi currently holds the position of Post-Doctoral Research Fellow at the chemical and petroleum department within the faculty of engineering, technology, and built environment at UCSI University. His research focuses on a wide range of topics, including wettability alteration, Smart Water technology, molecular dynamics simulation, surface complexity studies, predictive models, artificial intelligence and machine learning, smart materials, and low-carbon technology. Dr. Khosravi is actively involved in various professional organizations. He serves as a committee member of the UCSI-Cheras Low Carbon Innovation Hub Research Consortium. Furthermore, he is a member of the Malaysia Board of Technologists (MBOT) and the Institution of Engineering and Technology (IET) of UK. In the recent years, Dr. Khosravi has contributed significantly to the field through the publication of remarkable papers in prestigious peer-reviewed journals. His research primarily focuses on elucidating the wettability alteration mechanism and investigating surface complexity studies by employing various methods such as experimental activities and simulation tools.

Background

As the driving force of primary depletion declines, the reservoir energy can be sustained with external inputs in form of water or gas injection [1], a process referred to as secondary recovery. Nonetheless, in the case of unfavorable reservoir conditions, the recovery performance can drop considerably to as low as 20% of Original Oil-In-Place (OOIP). This can be attributed to the reservoir heterogeneities including fractures, significant disparities in permeabilities across heterolithic strata or sections, poor wettability conditions, high capillary entrapment or poor sweep efficiency by the injected water or gas. Thus, enhanced oil recovery (EOR) has become the more acknowledged term in scientific circles [2]. Based on specific driving mechanisms, EOR processes are frequently categorized into four different groups as the thermal methods, gas injection, chemical flooding and emerging processes [3]. These processes trigger chemical, physical and biological mechanisms in the reservoir to facilitate increment in oil recovery [4].An EOR process entails injecting a fluid into a rock-oil reservoir system to increase oil mobility and production by lowering IFT, improving oil swelling, reducing oil viscosity and modifying wettability [2, 5]. Based on recent studies [6-8], an interesting approach to modifying rock wettability by simply altering the water composition was developed, referred to as "Smart Water" technology. The technique alters wettability without significantly reducing the existing capillary forces [9], with the ultimate objective of enhancing oil recovery. Smart Water injection is cost-effective and highly profitable because it requires no addition of expensive chemicals and utilizes processed formation water obtained by relatively simple filtration systems.



Greater imbibition in increasing sweep efficiency by Smart Water adopted from [10].

The Importance Of Conducting This Research

In the recent decade, discussion have been continued on the cause of wettability alteration mechanism during Smart Water flooding. Also, determining the effective range of water ionic concentration resulting in altered wettability has erupted the argumentative debates. Along with this, there is still a requirement to identify the insitu wettability change and optimum water concentration. The goal of this study is to decipher the reason behind wettability changes and determining the effective and optimum of brine ionic composition by introducing a novel approach involves both monovalent (Na+) and divalent (Ca2+) ions.



Methodology

A systematic methodology was generated. Accordingly, a full set of contact angle and IFT measurements were conducted based on one-factor-at-a-time (OFAT) and design of experiments (DOE) methods. Besides, molecular dynamics simulation was employed as a practical tool to decode molecular interactions in the oil/brine/rock system and the documented mechanism. The study achieved its final goal by accomplishing force displacement experiments on sandstone.

Conclusion

This research was focused on sandstone and resulted in providing three new predictive models to estimate contact angle and IFT based on brine concentration or solvation free energies. Furthermore, using molecular dynamics modeling, the mechanisms involved in changing wettability namely "brine Prong" and "oil Vortex" effects were discovered where monovalent and divalent cations exist in the water chemistry structure. It showed the double activation of monovalent ions compared to divalent ions. The effective ranges of brine concentrations for changing sandstone wettability were determined to be 1-15 kppm for NaCl and 15-20 kppm for CaCl2, while 8 kppm NaCl-20 kppm CaCl2 was the optimal mixture concentration of brine, which resulted in a 3.63% increase in ultimate oil recovery. The outcome of this study was recently published in journal of Petroleum Science and Engineering (2022, https://doi.org/10.1016/j.petrol.2022.110800) and journal of Chemical Engineering Research and Design (2023, https://doi.org/10.1016/j.cherd.2023.05.056).

References

T. Ahmed, Reservoir engineering handbook. Elsevier, 2006.

D. W. Green and G. P. Willhite, Enhanced oil recovery. Henry L. Doherty Memorial Fund of AIME, Society of Petroleum Engineers Richardson, TX, 1998.

J. J. Taber, F. Martin, and R. Seright, "EOR screening criteria revisited-Part 1: Introduction to screening criteria and enhanced recovery field projects," SPE Reservoir Engineering, vol. 12, no. 03, pp. 189-198, 1997.

A. Muggeridge et al., "Recovery rates, enhanced oil recovery and technological limits," Phil. Trans. R. Soc. A, vol. 372, no. 2006, p. 20120320, 2014.

L. W. Lake, "Enhanced oil recovery," 1989.

A. Rafiei and E. Khamehchi, "Design of smart water composition based on scale minimization and its effect on wettability alteration in the presence of nanoparticles and mineral scales," Journal of Petroleum Science and Engineering, vol. 196, p. 107832, 2021.

A. Gmira, D. Cha, A. Alghiryafi, and A. Alyousef, "Smartwater Flooding in Carbonates: The Role of Iodides Ions in Wettability Alteration," in IOR 2021, 2021, vol. 2021, no. 1, pp. 1-9: European Association of Geoscientists & Engineers.



"bring Prong" effect and "oil Vortex" effect result in wettability alteration, reproduced from [11].





M. Rayhani, M. Simjoo, and M. Chahardowli, "Insights into effects of water chemistry on the sandstone wetting characteristics," Journal of Petroleum Science and Engineering, vol. 195, p. 107929, 2020.

T. Austad, "Water-based EOR in carbonates and sandstones: new chemical understanding of the EOR potential using "smart water"," in Enhanced oil recovery Field case studies: Elsevier, 2013, pp. 301-335.

S. Strand, T. Puntervold, and T. Austad, "Water based EOR from clastic oil reservoirs by wettability alteration: A review of chemical aspects," Journal of Petroleum Science and Engineering, vol. 146, pp. 1079-1091, 2016/10/01/2016.

V. Khosravi, S. M. Mahmood, and S. P. Yeap, "Unveiling the Molecular Interactions of Surface Wetting Modification in Porous Medium: A Groundbreaking Insight into Wettability Alteration," Chemical Engineering Research and Design, 2023/05/30/ 2023.



No.	Funding Scheme	Submission Closing Date
1	Selangor State Research Grant (GPNS) http://rmc.kuis.edu.my/web/	14 Jun 2023
2	Green and Resilient Recovery Local Action Grant Project https://www.undp.org/malaysia/stories/grant-available-seeking-submissions-green-and-resilient-recovery- local-action-grant-project	23 Jun 2023
3	ORRAA UK Blue Planet Fund Call for Proposal https://oceanriskalliance.org/resource/orraa-uk-blue-planet-fund-call-for-proposals/	2 Jul 2023
4	Malaysia-UN SDG Trust Fund https://malaysia.un.org/en/232871-call-proposals-2023-malaysia-un-sdg-trust-fund	14 Jul 2023
5	Global Centre on Biodiversity for Climate (GCBC) https://www.gcbc.org.uk/	20 Jul 2023
6	Franz Werfel Grant – Austria's Agency for Education and Internationalization (QeAD) https://oead.at/en/news/article/2022/12/oead-incoming-scholarship-programmes-and-further-grants-for- 2023-2024	15 Sep 2023
7	Global Funding for Rubber Innovation https://www.myrubbercouncil.com/globalrubberfund/index.php	Open throughout the year
8	National Conservation Trust Fund (NCTF) https://www.ketsa.gov.my/en-my/KetsaCore/Biodiversity/Pages/nctf.aspx	Open throughout the year
No.	Exhibition(s)	Submission Closing Date
1	International Invention, Innovation & Technology Exhibition (ITEX 2023) URL link: https://itex.com.my/	16 Jun 2023

Please refer to your respective Head of Research for more information.

Advisor

Distinguished Professor Dr Phang Siew Moi, FASc

Editorial Board

Professor Dr Mandana Barkeshli Associate Professor Ts Dr Shayla Islam Assistant Professor Dr Hafiz Muhammad Ali Assistant Professor Dr Rajat Subhra Chatterjee Assistant Professor Ts Dr Thung Wei Eng Assistant Professor Dr Mark Edmund Kasa Dr Wang Kang Han

Contact

Centre of Excellence for Research, Value Innovation and Entrepreneurship (CERVIE) 10th Floor, Block G, UCSI University, No. 1, Jalan Menara Gading,

UCSI Heights (Taman Connaught) 56000 Cheras, Kuala Lumpur, Malaysia

Tel: +603-9101 8880 (ext: 2256) Website: https://www.ucsiuniversity.edu.my/research

If you have any comments on the published content, or if you want to contribute to the forthcoming issues, please send them to the contacts listed above. The editors reserve the right to edit any articles for clarity and space before publication. Opinions and views expressed in this publication are not necessarily those of CERVIE, nor do acceptance and publication of articles imply their endorsement.

CERVIE neither endorses nor is responsible for the accuracy or reliability of any opinion, advice or statement published in this Newsletter. Under no circumstances is the publisher liable for any loss or damage caused by anyone's reliance on the advice, opinion or information obtained either explicitly or implicitly from the content of this publication.

