



SHIMADZU 1ST ASIA HALAL SUMMIT 2023

DEVELOPING A WORLD HALAL ECOSYSTEM

Organised by



UNIVERSITAS
BRAWIJAYA

Universitas Brawijaya (UB)

Established on July 11 1961, by the President of the Republic of Indonesia, UB transformed into a state university on January 5, 1963, following a Presidential Decree issued earlier in the same year.

Today, UB is one of the leading universities in Indonesia with more than 60,000 students in various vocational, bachelor, master, doctoral, professional, and medical specialist programs.



Shimadzu 1st Asia Halal Summit 2023

 Brawijaya University

09:00 – 09:30 **Opening Ceremony**

09:30 – 09:45 **Opening Address**

Mr. Dave Chua, Executive Officer & Senior General Manager of Shimadzu (Asia Pacific)

09:45 – 10:00 **Welcome Address**

Prof. Widodo, S.Si., M.Sc., PhD.Med.Sc, Rector of Universitas Brawijaya (UB)

10:00 – 10:10 **Photo Taking Session**

10:10 – 10:30 **Launch of Mobile Halal Test Kit by LPH Universitas Brawijaya**

10:30 – 10:45 **Coffee Break**

10:45 – 11:15 **Plenary Session I**

Moderator: Prof. Ir. Sukoso, M.Sc., Ph.D

Halal Regulatory System

Dr. H. Muhammad Aqil Irham, M.Si , Head of Halal Product Assurance Organizing Agency (BPJPH)

11:15 – 12:10 **Plenary Session II**

Moderator: Prof. Ir. Sukoso, M.Sc., Ph.D

**Shimadzu Solutions for Food Safety & Halal Integrity Testing:
Determining Alcohol in Food and Non-Food Products Using GC-FID**

Jackie, Ph.D Assistant Product Manager, Shimadzu (Asia Pacific)

**LC-MS/MS Based Technology in Supporting Halal:
Porcine Analysis with LCMS/ MS for Halal Authentication**

Max Kosok, Ph.D, Senior Product Specialist (LC/MS), Shimadzu (Asia Pacific)

23 MAY 2023

12:10 – 13:10 **Lunch Break & Dhuhr Prayer**

13:10 – 14:30

Plenary Session III

Moderator: Prof. Dr.Sc. Asep Awaludin Prihanto, S.Pi, M.P

Halal Authentication Method Based on Nucleic Acid

Dr. Ir. Joni Kusnadi, M.Si,

General Manager of Halal Inspection Institute, Universitas Brawijaya

Challenges and Opportunities of Halal Ecosystem in Digital and Big Data Era

Asst Prof. Dr. Rodziah Atan

*Head of Laboratory of Halal Policy and Management in Halal Products Research Institute,
University Putra Malaysia*

Opportunities of Artificial Intelligence for Halal Authentication

Prof. Wayan Firdaus Mahmudy, S.Si., M.T., Ph.D

Dean of Faculty of Computer Science, Universitas Brawijaya

14:30 – 15:00

Coffee Break & Asr Prayer

15:00 – 16:30

LSIH Lab Tour, Poster Session & Expo Session

16:30 – 16:45

Poster Award Session & Closing Ceremony

Dr. Yuni Kilawati, S.Pi

16.45 – 18.45

Maghrib Prayer

 **Grand Mercure Hotel**

18.45 – 21.00

Gala Dinner

** Schedule may be subjected to changes*



Dave Chua

Executive Officer and Senior General Manager, Shimadzu (Asia Pacific), Singapore

Welcome to Shimadzu 1st Asia Halal Summit 2023, the first-ever Summit in the Halal world! This Summit is jointly organized with Brawijaya University, Ditek Jaya and Shimadzu (Asia Pacific).

The theme of the summit is “Developing the World Halal Ecosystem”, with a focus on methods for halal authentication, AI, and digital technology. Halal analysis has transitioned towards an analytical-based approach and can be categorized into 3 categories: Halalan, Toyyiban, and Ethics Testing. It is crucial that the products comply with Islamic law by being clean, safe, authentic, and beneficial. Halal analysis is more than just food safety – it is food security.

At Shimadzu, we offer End-To-End Solutions for Food Security. For example, our GC enables you to do the Analysis of Alcohol and Pesticides, while our LC, LCMS, and MultiNA can help with Porcine Detection and Meat Authentication.

As part of the Summit, you will get an exclusive tour of Brawijaya University’s ISO-17025 certified Halal Testing Lab, supported by Shimadzu’s state-of-the-art technologies. We also want to collaborate with the leading Halal authorities in the region, such as BPJPH in Indonesia, JAKIM in Malaysia, MUIS in Singapore, among others.

Since 1875, we have been committed to meeting our customers’ needs worldwide. This year is no exception. At Shimadzu 1st Asia Halal Summit 2023, we will provide you with the latest developments, innovations, and technologies to meet the ever-evolving demands of the halal industry.

Let us work together toward establishing a World Halal Ecosystem. Thank you very much.



Prof. Widodo, S.Si., M.Sc., PhD.Med.Sc

Rector of Universitas Brawijaya (UB)

السلام عليكم ورحمة الله وبركاته

Glory and praise be to Allah the almighty and the most merciful. Peace and blessings be upon His Messenger, Muhammad.

I would like to welcome you to Shimadzu 1st Asia Halal Summit 2023, a conference that brings together Islamic scholars and clerics, better known as Ulama, scientists, engineers, professionals, and students to address and discuss emerging halal issues in an effort to develop the world's halal ecosystem.

Halal assurance is one of the essential needs for Muslims, as they are obliged to verify that all products that they are using are permissible under Islamic law. Along with the advancement of science and technology, many consumer products are now produced through complex processes. The complexity may involve by-products or other aspects that are not permissible from the Islamic law viewpoint. This raises the need for a halal ecosystem in almost all industrial sectors. The halal industry itself is a globally broad market, worth at least five trillion US dollars as estimated by the global consulting group AT Kearney, which attracts multinational and independent entrepreneurs to secure the markets.

Here we are proud to have Brawijaya University in partnership with Shimadzu industry to organize this Summit. Brawijaya University, through its Halal Inspection Institute, has a strong commitment to continuously work toward the development of the halal ecosystem. We hope that all delegates of this conference can enjoy the valuable discussions under the academic atmosphere, initiating new connections and collaborations; as well as enjoying the culture and the nature of Malang. We hope that this meeting can further evolve to be one of the world-leading Islamic scientific conferences focusing on innovative halal issues.

والسلام عليكم ورحمة الله وبركاته

May Allah guide us all to the truth and keep us on the straight path.

Dr. H. Muhammad Aqil Irham, M.Si

Head of Halal Product Assurance Organizing Agency (BPJPH)



Halal Regulatory System

The new era of Halal Certification in Indonesia by the government, in the case of the Ministry of Religious Affairs (MoRA), through the Halal Product Assurance Organizing Agency (BPJPH), with mandatory: Halal Product Assurance.

The aims of implementing Halal Product Assurance are to provide convenience, security, safety, and certainty of the availability of Halal Products for the public in consuming and using the product; and to increase the value added for the businesses to produce and sell Halal Products. Products that enter, circulate, and trade in the territory of Indonesia must be Halal certified. (Law No. 33 of 2014, Article 3 and Article 4).

From 2017 to 2023, there are dynamics of halal regulation and its derivatives. On the one hand, Halal Certification Services follow the era of digitalization and integration of Halal Certification services through the Halal Information System (SIHALAL). In developing the integrated electronic-based SIHALAL and automation of the Halal Certification process, Artificial Intelligence (AI) is used repeatedly and works tirelessly.

The purpose of implementing AI in the Halal Certification process is to help carry out automatic Validation and Verification. Apart from AI-based automation, SIHALAL is also continuously being developed by implementing a traceability system for Halal Products using Blockchain.



Jackie, Ph.D

Assistant Product Manager (GC & GCMS), Shimadzu (Asia Pacific)

Shimadzu Solutions for Food Safety & Halal Integrity Testing: Determining Alcohol in Food and Non-Food Products Using GC-FID

In today's world of widespread food adulteration, it is critical to conduct official testing and certification to ensure food safety and halal compliance for our Muslim community. The market for halal ingredients was estimated at USD325.7 billion in 2021 and growing at a compound annual growth rate (CAGR) of 3.27%.

To demonstrate our dedication to this growing need, Shimadzu offers leading-edge solutions and state-of-the-art technologies for Food Safety and Halal testing. As a global leader in Food Safety and the world's longest-serving analytical instrument manufacturer since 1875, we take pride in our commitment to continuously deliver the most efficient and cost-effective workflow solutions for Food Safety and Halal Integrity testing.

During the presentation, Jackie will present different strategies to address Food Safety in which Shimadzu's analytical instruments can be employed to achieve effective testing. He will also share more on Ethanol Testing using GC specifically in his talk.



Max Kosok, Ph.D

Senior Product Specialist (LC/MS), Shimadzu (Asia Pacific)

LC-MS/MS Based Technology in Supporting Halal: Porcine Analysis with LCMS/MS for Halal Authentication

Gelatin is extensively utilized in food, cosmetics, and pharmaceutical industries and is often manufactured from porcine materials. To ensure safe usage for the Muslim community, the use of porcine gelatin or other pork-originating products must be restricted, and accurate labelling is requisite for consumers' confidence towards the products.

Various approaches and targets have been utilized to trace porcine materials in consumer products, including pork DNA, by qPCR. However, DNA is prone to thermal degradation and thus its viability remains questionable after product manufacturing. On the other hand, targeted proteomic analysis using a sensitive LC-MS/MS platform is an ideal alternative to PCR-based approaches. Still, the high similarity in amino acid sequences between bovine and porcine gelatins remains a challenge for differentiation of the animal sources.

Here, Max will present a targeted proteomic approach by LCMS to detect species-specific peptide markers, including semi-quantitation of gelatines in food, pharmaceutical capsules, and personal care products at as low as 0.1% adulteration.



Dr. Ir. Joni Kusnadi, M.Si

Technical Manager of Central Laboratory of Life Sciences, Lecturer of Food Science and Technology, Universitas Brawijaya, General Manager of Halal Inspection Institute, Universitas Brawijaya

Halal Authentication Method Based on Nucleic Acid

Halal product authentication is essential at every level of the product manufacturing process, from raw materials to the final product. In Indonesia and many other countries, halal authentication for materials/products is required as part of the halal certification process.

For food authentication, detecting species-specific DNA fragments is a widely used method to identify the meat species, owing to its excellent specificity and selectivity. Moreover, such DNA-based identification is suitable to be employed on raw and processed meat, making it a preferred method for halal product authentication.

Thus, Dr. Ir. Joni Kusnadi will briefly discuss various DNA-based identification methods such as DNA barcoding, RFLP PCR, conventional PCR, real-time PCR, biosensors, CRISPR, and isothermal amplification. Nevertheless, it is important to note that while PCR is the widely recommended method, alternative methods that are simple, fast, accurate, and do not require complicated and expensive instruments are urgently needed to meet the increasing demand for halal products, which will also be discussed.



Asst. Prof Dr. Rodziah Atan

*Head of Laboratory of Halal Policy and Management in Halal Products
Research Institute, University Putra Malaysia*

Challenges and Opportunities in Halal Ecosystem: Digitalization and Big Data

The halal ecosystem plays a significant role in catering to the needs of the Muslim population worldwide. With the advent of the digital and big data era, new opportunities and challenges have emerged in managing and optimizing the halal industry.

Exploring the impact of digital technologies and big data on the halal ecosystem is vital, with a focus on key areas such as halal certification, traceability, and supply chain to enable trust and transparency and, at the same time, combat counterfeit products. There is vast potential for big data analytics yet to be explored in the halal ecosystem, which might offer insights into consumer preferences, market trends, and supply chain efficiencies within the halal ecosystem.

In this presentation, Dr. Rodziah Atan will share more on this thought-provoking topic to explore ways to leverage digitalization and big data opportunities while overcoming challenges to establish an advanced halal ecosystem.



Prof. Ir. Wayan Firdaus Mahmudy, S.Si., M.T., Ph.D

Dean of Faculty of Computer Science, Universitas Brawijaya

Opportunities of Artificial Intelligence for Halal Authentication

The community's need to obtain halal food has encouraged the application of Artificial Intelligence (AI) for halal authentication. AI is a technology that allows computers to think and perform tasks like humans, using algorithms and mathematical models, with minimal error and high accuracy.

This presentation discusses the potential of AI in facilitating the authentication of halal food and making it easy for consumers to choose halal food according to their beliefs. In particular, the focus is on how AI and computer vision technology can be used to identify food components and ensure their halal status more efficiently and accurately.

A few key applications will also be shared:

- (1) The development of an AI-powered search on mobile phone that can easily recommend the nearest halal restaurant based on the user's location
- (2) The use of AI technology to verify the authenticity of halal labels on food and beverage products.

THE IMPORTANCE OF HALAL PRODUCT ASSURANCE

The accidental or intentional adulteration of pork meat into food products poses a serious challenge for individuals following specific religious dietary restrictions, particularly those concerning Halal or Kosher foods. Particularly for Muslims, those restrictions are part of Islamic law concerning Halal and Haram foods.



HALAL

Permissible, lawful and allowed according to Islamic law (Shariah)

Meat from animals slaughtered in accordance with Islamic law, permissible seafood, fruits, vegetables, grains, and dairy products etc.



HARAM

Prohibited, unlawful and forbidden according to Islamic law (Shariah)

Pork and its by-products, meat from animals slaughtered not in accordance with Islamic law, carnivorous animals, alcohol, and intoxicants etc.

Consumers need to have the confidence that every aspect of the products they consume, from the ingredients to the processing, handling, and storage are done in proper accordance to ensure Halal integrity. It is not just a matter of meeting consumer demands, but also a matter of ethical and responsible business practices.



ENSURING THE QUALITY OF HALAL PRODUCTS

Our Products, Your Solutions



ANALYTICAL
INTELLIGENCE

UFMS
ULTRA FAST MASS SPECTROMETRY

Detection of Pork Meat and Gelatin

Porcine gelatin can be found in consumer products such as food, beverages, cosmetics, or pharmaceutical products due to its gelling properties. Apart from porcine gelatin, pork meat may be found in high-quality meat products as a result of food adulteration. In both cases, LC-MS/MS analysis provides a robust and high-sensitivity method for halal authentication by detecting pork-specific peptides and porcine.

LC and LCMS Solutions

Equipped with Analytical Intelligence, Shimadzu's Nexera Series can detect and resolve critical issues automatically, thereby providing a new level of UHPLC performance. Coupled with LCMS-8060NX, which is powered by both Ultra-Fast Mass Spectrometry (UFMS) and Analytical Intelligence, the result is a fast, robust, and intelligent system that can meet the demands of halal testing needs.



Nexera Series



LCMS-8060NX

Alcohol Analysis

The Islamic laws strictly prohibit the consumption of alcohol (ethanol). Muslims are forbidden to consume any food or beverage containing alcoholic content. Consequently, there is a requirement for developing a rapid and convenient analytical technique to detect the presence of ethanol in beverages, dairy products, vinegar, and sauces, for Halal Authentication.

GC Solutions

The Living GC, Nexis GC-2030, delivers best-in-class sensitivity and reproducibility for reliable Halal testing. Its Analytical Intelligence also makes it a valuable addition to any laboratory. Using a headspace sampler, a fast, sensitive, and quantitative determination of ethanol in various aqueous food samples can be achieved with minimal sample preparation.



Nexis GC-2030

Detection of Lard

Animal fats such as lard are typically used in food. However, there are cases where edible oils with high commercial value are adulterated with cheaper oil or lard for profit. Such adulteration practice is a commercial fraud that could lead to negative economic implications and raise religious issues. This is because Islamic law prohibits Muslims from consuming pork in any form, including lard, in food, making it crucial to perform Halal authentication.

FTIR Solutions

Designed with best-in-class low noise, ultra-high sensitivity of 55,000:1 S/N, and full compliance with regulations, IRXross can easily meet the demands of users' application needs. Moreover, with built-in Analytical Intelligence, IRXross is suitable for users regardless of skill level – multiple samples can be analyzed with a single click without the need to set parameters.



IRXross

Meat Species Identification

Unintentional cross-contamination or meat adulteration of products with pork will refute the halal status of the meat. To inspect for adulteration and perform Halal authentication, species-specific DNA fragments are commonly used in meat species identification. Due to the excellent specificity and selectivity, DNA-based PCR methods and screening kits have been widely used in pork detection.

DNA/RNA Analysis Solutions

MultiNA simplifies the pre-processing and detection operations in identifying meat species and enables convenient, accurate, and rapid identification of each meat species. With automated analysis of up to 108 loaded samples and automated size calculation, MultiNA provides outstanding ease of use while ensuring high throughput.



MultiNA

BUILDING A HALAL ECOSYSTEM WITH SHIMADZU END-TO-END SOLUTIONS

As halal authentication and testing move towards scientific approaches, analytical techniques are increasingly used in targeted or non-targeted approaches to detect components such as pork meat, pork gelatin, lard, and alcohol.

However, the testing of food, cosmetics, and personal care products poses analytical challenges due to matrix complexity and lack of specific markers. In some cases, the adulterant is present in only trace amounts, which makes it difficult to be analyzed. Thus, it is essential to develop instrumental-based Halal testing with high sensitivity.

Shimadzu's leading-edge technologies can help in this effort. With comprehensive products and workflow solutions, Shimadzu can meet the demand with speed, sensitivity, and robustness. Learn more about our resources and solutions below.



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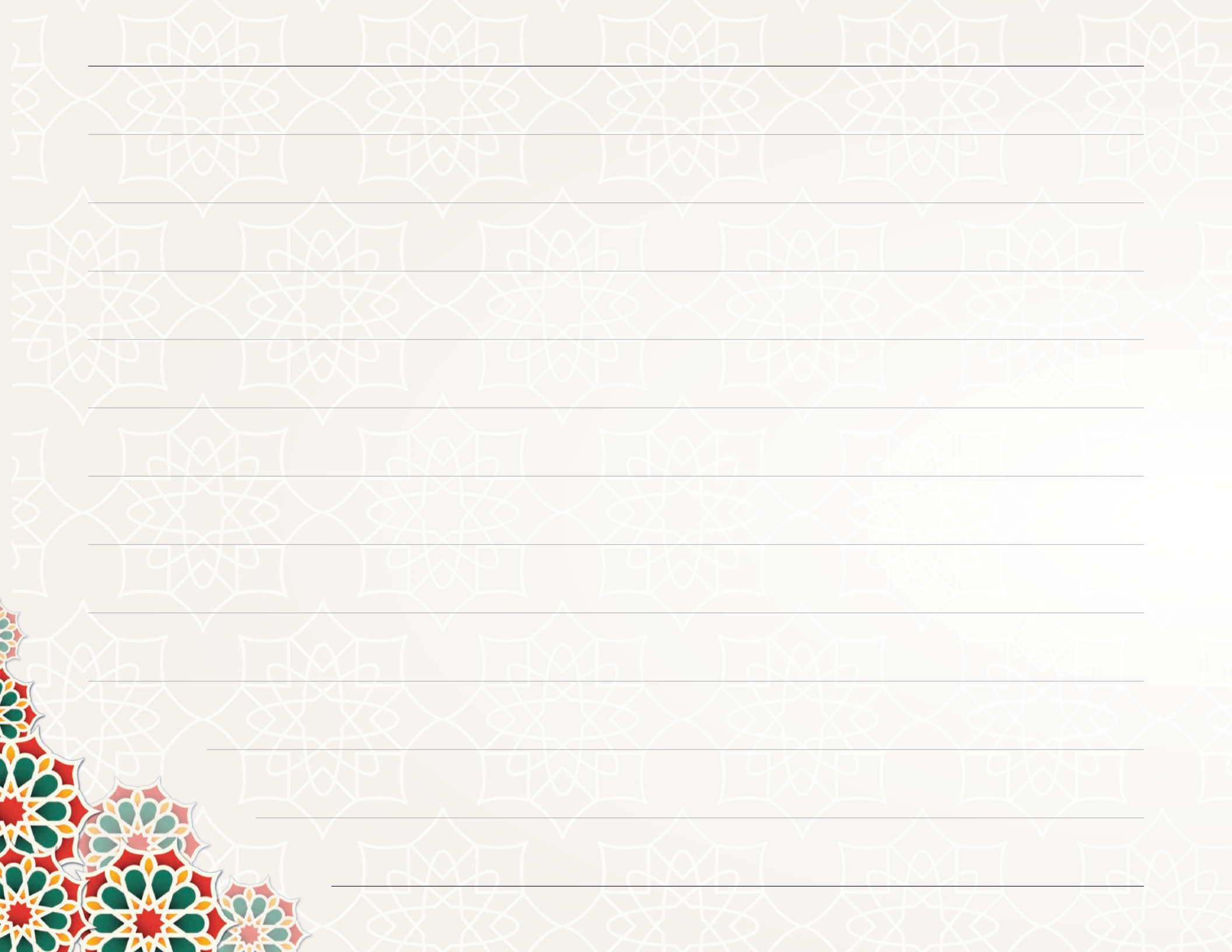
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