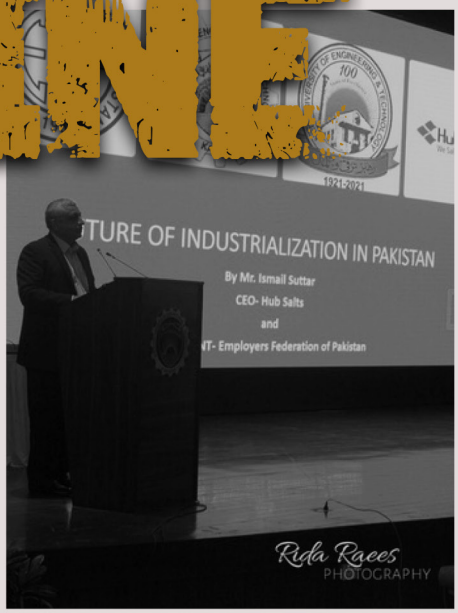
SOCIETY OF FOOD ENGINEERS

SOFE MAGAZINE

2021-2022



@sofeneduet

Soceity of Food Engineers

@sofeneduet

table of CONTENTS

OUR STORY

About SOFE

The Society of Food Engineers is a developing community striving to provide an extended platform for the skillful undergraduate engineers, uplifting themselves to grow finer. Society renders help and support to beginners in order to improve their mindset, broaden networks, germinate good communication skills, and flourish one's capabilities.

Mission

As an eminent field that is sprouting with a gradual series of time thereby today, nearly all individuals are unknown about its existence hence our mission is to assure that the field is familiar to each brain.

Goals

1. To create awareness among the people regarding the rising field of Food Engineering.
2. To interconnect evolving food engineers with top-notch Alumni and elite industries.
3. To generate the importance and need of resilient yet flexible Food Engineers in the fattening global society.

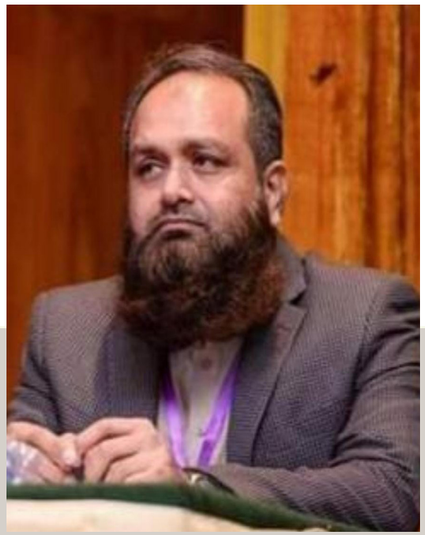
About Food Engineering

Food engineering is one of the most multidisciplinary fields in engineering. It combines engineering principles with other fields like microbiology, physical sciences, chemistry, and more. Food engineers are responsible for ensuring the safe and efficient processing, packaging, and delivery of food to every store shelf in the world.

Food Engineers take engineering principles and apply them to the storage, processing, and distribution of food materials and other bio-products. They also focus more on the packaging technique, processing, and food quality aspect of the supply chain.

Food engineering is a vast field that encompasses everything from machines used in the manufacturing plant to storage systems on transport trucks. Apart from the machine work, they solely look after the quality of the food commodity processed within factories/ industries thus working under the departments of quality control, quality assurance, and research and development. They actively participate in almost all the majors within a food industry to not only monitor or control the processing but furthermore troubleshoot problems intervening in the food industry (including multiple software); whether it's about food's shelf life, storage, quality, unit operations, technology, inspection, packaging, etc.

Chairperson's Letter



"Good things remain good only because they are always scarce."

I Dr. Zahoor ul Hussain Awan, the chairperson of the Food Engineering department, am extremely delighted and grateful to compose a message for the newly developed society of our very own Food Engineering department. I remember in October 2021, I visited the class of the final year students to make them realize the importance and need of creating a society to build up awareness among the engineering students of our field Food Engineering; that was the time and this is the time, just a year difference and Alhamdulillah, we have been witnessing spectacular success and fruitful results due to the hard work and efforts made by the undergraduate students from freshmen to sophomores & juniors to seniors.

Furthermore, I am glad to pen for this wonderful magazine as an appreciation of the commendable efforts put forth by the team for its grand beginning. The efforts taken to bring about innovative content are appreciable. I express my compliments to the secretary, the editors, and their dedicated committee for their valuable efforts in bringing out this issue. I wish them all triumph!

Wish you all a grand operation throughout the year. Hoping to experience and hear far better in the future.

President's Note

It was truly a privilege for me to serve as the President of the Society of Food Engineers (SOFE) and to work closely with a committed group of colleagues and friends to fulfil the mission of our growing and vibrant society for the tenure 2021-22. The core purpose of this society was to create awareness about the rising field of food engineering, its scope among the people and to make the evolving food engineers know their worth and position in the global society. I would like to give either at the front or back for putting his or her efforts in getting the society started. We have accomplished good things together and I look forward for the growth of society. My journey with SOFE being its president has been worthwhile. I wish all the members of SOFE for the tenure 2022-23 good luck and encourage them to work together with dedication and consistency to heighten the society by driving it forward with diligence. Hope to see you people bringing something even better to the table.

Vice President's Note

I am honored to serve as the first Vice President and the founding member of the society of food engineers. Building Sofe was the most enjoyable process and I tried to put all my expertise and efforts into making it what it is today. I started the role with a vision to make it a learning experience for other members and made sure to support and encourage my team throughout the journey. Fortunately, I too was able to discover fundamental activities in grooming my skills. Extremely thankful to all those who participated in assembling the foundation of Sofe. I hope to see Sofe achieving excellence and immense triumph. I moreover, would like to send good wishes to SOFE for its future endeavors.

Events

1ST SESSION: GLOBAL HALAL OPPORTUNITIES FOR FOOD PROFESSIONALS

The event was fundamentally based on the Existence of Halal foods and their services throughout the globe to ensure the demands of the Muslim customers specifically. The seminar had three speakers, Sir Zahoor; the Chairperson of the Food Engineering Department, Mohammad Awais Khan; the Chief Executive Officer at Global Halal Services, and Khurram Shehzad, who is a Food expert. Viewers were informed about Global Halal services and its standards which are followed throughout the world for the acquirement of its certification. They also acknowledged the audience about their future goals.

Future Vision

•Collaboration of Global Halal Services & Food Department NED

• Halal Institutions to enforce certifications of Halal in Industries.

• Not confined to only food & pharmaceutical companies will enter the cosmetics and design industries.

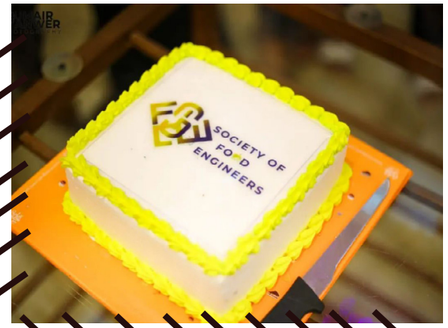
• Opportunities for Food Engineers and Technologists in the Halal Industry

2ND SESSION: ALUMNUS SPEAKER SESSION

The Seminar started at 2:00 pm and ended at 4:30 pm sharp. With utter regard and honor, the National anthem was sung at the beginning at NEDUET LEJ Campus. The speakers were Syed Zain M. Abidi; Batch 2013-14, Mr. Ali Siddiqui; Batch 2013-14, Mr. Osama Qaiser; Batch 2016-2017, Ms. Falak Naz; Batch 2011-2012.

Syed Zain M. Abidi's had a topic of Automation Role and Robotics Part in The Food Industry, Mr. Ali Siddiqui's topic was Importance of Design Aspect in Food Engineering and It's Scope while Mr. Osama Qaiser's was Job Hunting and Ms. Falak Naz's was Food Safety Regulation Organization.

FRESHERS'S EVE X LAUNCH OF SOFE



3RD SESSION: WEIGHT LOSS SESSION

To stay fit and healthy is everyone's desire, thus to accomplish a healthy lifestyle a session was held in the NEDUET LEJ Campus IT Lab, this session was honored by the presence of Dr. Zubala Lutfi, Assistant Professor, Food science & technology, Karachi University, on 30th March 2021. She gave the audience tips and tricks on a good diet and also gave answers to the questions of the students helping them to better understand the need for a healthy diet for their and their loved one's life. Some of the interesting facts that she discussed were:

Interesting facts discussed during the Seminar

Water should be consumed before a meal as it can disturb the pH of the stomach.
Intake mango shakes in summer and tries to shift toward beetroot, carrot, and apple juice. Consumption of casein and cheese is important for underweight people.
Myth → Egg can cause escalated BP.
Reducing Carbs in the diet does not benefit the health, and further causes bloating
Reality → No, an egg is full of nutrition, it contains good cholesterol which must be consumed unda er limited amount i.e. 1 egg/day.
Carbohydrate intake in an adequate amount can help in better digestion and may aid in losing weight.

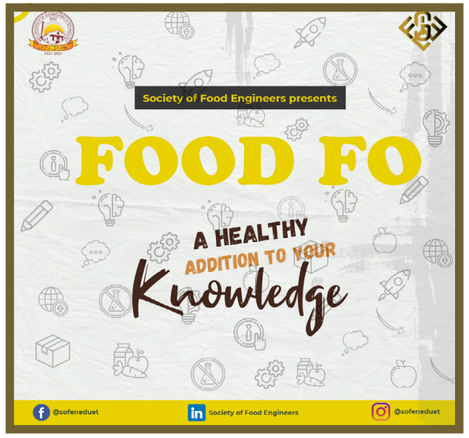
4TH SESSION: AI & MACHINE LEARNING IN FOOD INDUSTRY

The Seminar (Artificial intelligence and Machine learning in the food industry) took place on 2nd June 2022 i.e. Thursday at 11:00 am. The seminar was highly honored by one of the prestigious NED Professors named Dr. Syed Ali Ammar Taqwi teaching in the Chemical Department.

The audience was initially provided with a brief description of what is AI and how it is one of the primary parts of the food industry. AI is the smart working of machines, as it automatically implements the task without any prior instruction. Through AI food that is manufactured within a firm can be monitored, inspected, and tested readily plus effortlessly. The speaker enlighted the fact that Mc.Donalds was the first-ever restaurant on the globe to make access use of AI. Also, spectators were moreover, introduced to an App named Kahoot, which was used to play a game to make the seminar more interesting.

FOOD FO

Ever-growing innovations happening around the globe for the better processing of food products have always been a dire need of every Food industry to interest its consumers towards them and make their worth in the market. Thereby for its betterment, many renowned brands are working within the field of engineering to make a simple, advance, and easy to cope with technologies almost every week. These techniques are particularly been produced, modified, and inspected by the emerging inevitable Food engineers. Hence to spread advanced technical awareness among the students of food Engineers, the idea of Food Fo was innovated by SOFE.



Food Fo is a series of information based on advancements, innovations, and techniques used in the emerging field of Food Engineering.

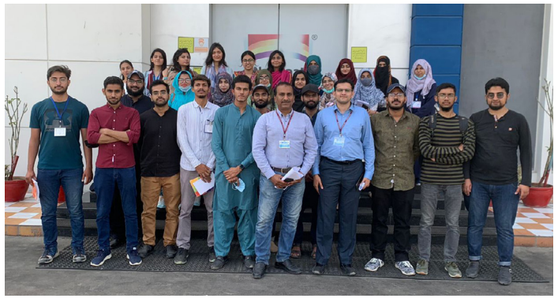
This initiative was taken by SOFE to educate the audience as well as the aspiring Food Engineers so that they expand their horizon and implement the knowledge further in this field. The information was delivered to the audience through Social media platforms via weekly posts. Under SOFE tenure 2021-2022, the Food Fo introduced its 4 series listed as follows:

1) Plastic-free Packaging in Food Industry
2) Ancient Method for the Preservation of Grapes
3) Drones in Food Industry
4) Turning Food waste into Organic Fertilizer

Contributors

Hafsa Naveed
Umema Afzal
Hira Jawaid
Yashab Zehra
Maryam Irfan

INDUSTRIAL VISIT: NATIONAL FOODS



The first Industrial visit, arranged by SOFE, was to National Foods Ltd. On Thursday 24th March 2022. The industry is located at Site Area and is capacity-wise very large consisting of different departments. Students, as visitors were provided an opportunity to visit each department where fundamental unit operations were in action such as the packaging room, raw material separation room, snack manufacture room, pickle making room, and further were revealed by hammer mill room that was a part of the industry. The rooms were located sequentially according to the cycle of unit operation taking place. Students were requested to follow specific SOPs before making a survey in the industrial rooms. Post survey, visitors were provided with a small brunch as a kind gesture.

The visit was undoubtedly a learning approach towards better practical knowledge and implementation of their theoretical study into hands-on skills.

INDUSTRIAL VISIT: DALDA FOODS

The second industrial visit, arranged by SOFE, was to Dalda Foods Ltd. on Thursday 30th June. The visit was to the site area of the plant where only the refining stage of oil is performed; however, it was quite a large plant industry area-wise. The plant consisted of 3 units for refining in which different processes such as degumming, neutralization, blending and deodorization are carried out. Refining is the last and final stage for the manufacture of oil, thereby primary precautions and details are required for this operation, thus particularly proper sanitation was followed within the industry. Pre-survey, the basic block flow diagram of the process was described to the students so that they could analyze the knowledge of the entire evolution of the plant.

Food waste is a global challenge from collection to disposal. The problem associated with food waste is on the increase ranging from its discharge, loss, degradation and contamination. Food wastage can be effectively managed through proper storage, purchasing what is needed and giving excess to those in need. The most effective means of managing food waste is through effective sorting at source and recycling for industrial processes for the production of value-added products, thereby reducing the options of incineration and landfilling.

Food waste at household levels can also be reduced by extending food shelf life and reducing waste through chill out and safe stores, learning your labels, getting creative with leftovers, and sharing surplus. In developed countries, there are separate bins for different waste pick up. The bins separation indicates some basic awareness of food wastage due to the need for waste separation at the source. Reducing food loss and waste through innovation plays a major role in improving food security and nutrition, promoting sustainable environment and natural resources, and lowering food production costs. However, the use of food by-products and the conversion of food waste is still limited. Studies have shown that food waste has high crude protein values, minerals, as well as other bioactive compounds of nutritional benefits and this food waste can also be channeled into animal feed production thus increasing livestock productivity.

Creating good habits for the future involves communities supporting one another and households playing their role in cutting down food waste. Individual purchasing what is needed, storing it safely and creatively using leftovers, thereby helping the planet and supporting the whole community to access food during the challenging time will reduce the amount of food waste generated.

Conclusion

The development of sustainable food waste management is essential as it remains a big hurdle for the society. Effective food waste management provides social, economic and environmental benefits globally. Development of a sustainable food waste management could be achieved by redistribution of surplus to the needy or social services. Educating the public on getting what they need at a time will help reduce food waste in the future, thereby making food available for everyone.

Cream of Crop

They say that necessity is the mother of invention, and nowhere is this truer than in the world of food. Food engineering is a professional and scientific interdisciplinary subject of food manufacture that focuses on the practical applications of food science.

It first appeared as an academic field in the 1950s. Even though food engineering is a relatively recent scientific field, the activities it embraces are centuries old.

It has been more than 70 years since this discipline was generated, and many exceptional food engineers have contributed their lifetimes to its progress. Here are some of the most renowned food engineers of all time, who have not only left their mark but also left a legacy that the world quite literally lives within.

Arthur Morgan

Morgan pioneered foam mat drying, an altogether new process for drying food liquids by transforming them into dense, stable foams, as well as other novel food dehydration technologies. Morgan also invented a new method for removing colored bran from grains and devised many methods for restoring foods' original fragrances. Morgan invented two new types of evaporators and enhanced the performance of others.

Howard Kraft

G. Howard Kraft designed and developed equipment for many food/packaging applications during his 43-year career at Kraft. Kraft invented the first commercially feasible process for applying modified atmosphere packaging to the packaging of a food product gas flushing.

Olin Ball

Olin Ball, who was born in Abilene, Kansas, was a food technologist. During his graduate studies at George Washington University (1919-22), he conducted research for the National Canners Association on canned food sterilization. He provided the first well-defined mathematical approach for determining thermal processes for canned goods in 1923. Since then, the "Ball Formula Method" has been the most extensively used in the US.

Clarence Birdseye's employment as a field naturalist for the United States government carried him to the Arctic. When he placed newly caught fish on the Arctic ice and exposed them to the freezing wind and severe temperatures, he discovered that they froze solid very instantly. He also discovered that when the fish was thawed and eaten, it retained all of its fresh properties.

John T. Dorrance was born in 1873 and is known as the "Father of Condensed Soups." Dr.John Dorrance created the recipe for commercially condensed soups using his laboratory equipment. The capacity of a can of soup was decreased from 32 ounces to around 10 ounces by eliminating the water, and the price was cut from approximately 34 cents to a dime.

Adolph S. (Al) Clausi, Jell-O Instant Pudding was his first big creation. Clausi also developed instant chiffon pie fillings and a variety of other ready-to-eat desserts based on gelatin, starch, and gums. He also contributed to the invention of one of the original dried mashed potato products. He created a line of revolutionary ready-to- eat -shaped cereals while working for General Foods' Post Cereal Division.

Dr. Daniel Farkas was a member of Dr. Arthur Morgan's engineering team at Western Research Laboratory in Albany, California. His study was unique and cutting-edge, depending on engineering and physical concepts applied to food processing activities. Advances in fluidized bed drying and the creation of the helical pump for thermal processing activities are among his numerous accomplishments.

Dr.Andre Bolaffi invented the first commercial disposable "inert" plastic container for the beverage industry. The development, which was carried out effectively at PepsiCo Inc. He also created a one-of-a-kind flexible packaging with a one-way working valve. The packaging was developed to keep roasted coffee beans fresh during storage by utilizing a method that efficiently enabled the evolution of carbon dioxide while prohibiting the introduction of any other gas.

Felix Germino invented a soft-moist technology while working as the head of R&D for Quaker Oats Company, which led to the extremely successful production and marketing of the first soft, chewy snack bar. An innovative redesign of single screw extenders resulted in a high-pressure extrusion system with a 250 percent performance boost. He discovered and exploited the distinct polymer characteristics of granular and waxy starches.

Food Laws and Regulations

Food is any unprocessed, semi-processed, and processed item that is intended to be used as food or drink. Senior management ensures food quality and safety of food, whereas government enacts food laws and regulations country-wide. Food quality is the extent to which all established requirements relating to characteristics of food are met, however food safety is the extent to which those requirements relating specifically to characteristics that have the potential to be harmful to health or causes injury are met. While on the contrary food laws are general rules set by the government to follow and food regulation refers to a path for the implementation of the law. These food laws and regulations are important to reduce the negative impact of contaminated food.

T he laws' goal is to make sure that Food companies is doing everything possible to ensure that their product is safe, to prohibit food companies from doing acts that endanger their customers' health, to ascertain that consumers have all of the information they require to make informed decisions, to make sure that Businesses are not allowed to provide consumers with deceptive information and to assure that customers have access to knowledge on nutrition, food preparation practices, and how to comprehend and use food product information.

Within particular food industries, the food quality and safety are being covered by a combination of different programs that are Quality Management System(QMS), Quality Assurance(QA), Quality Control(QC), Hazard Analysis Critical Control Point (HACCP), and International Organization for Standardization (ISO), Good Manufacturing Practices (GMP), etc.

In food industries, the HACCP system is subdivided into two types HACCP Pre-Requisite Program (PRPs) and HACCP plan which are for every department and every product. GMPs are part of HACCP PRPs that address all food safety considerations that are not included as part of the HACCP plan as well as all non-hazardous contaminants whereas who do not

operate with HACCP but have implemented ISO 9001 QMS standard, as minimum GMP should be part of applicable regulatory requirement of the standard.

PSQCA is the organization in charge of national standardization.It ensures consumer safety and health precautions through standardization.

Food laws and regulations are in place to protect the public from food-borne and water-borne illnesses, to increase industry and consumer confidence in the food regulatory system, and to promote economic growth and development by encouraging fair trade practices and sound regulatory

DEBUNKING THE MYTHS

We've all heard a "fact" regarding food that we gullibly believed to be valid, only to realize it was false later on. Processed foods have a historically terrible reputation for being unhealthy, and they are generally the first to be eliminated from your diet if you're attempting to eat healthier. However, if you believe that all processed meals are unhealthy just because they are processed, you may be shocked to learn that this is not the case. So, how can we distinguish between reality and fiction when it refers to food-related myths? Read on to discover the 5 most popular food misconceptions debunked by science.

Frozen and canned fruits and veggies are less nutritious than fresh ones

Fresh fruits and vegetables are more nutritious than frozen and canned varieties. But the commodities in the produce area have typically traveled a significant distance, spending days or even weeks in transportation from the farm or orchard.

Carbonated beverages are unhealthy

A glass of sodium-free seltzer with a wedge of fresh lemon quenches your thirst without causing harm to your health. When drunk in excess, soda, on the other hand, will lead to health concerns such as weight gain, cavities, and high blood pressure.

Are preservatives bad for health?

Preservatives, are used in keeping food fresh. These preservatives assist in increasing the shelf life of food products while also preserving the flavor of food for an extended period. However, all preservatives used in food are not harmful to one's health. Natural preservatives are used to keep the food "as it is" and are not damaging to your health. The reason for this is, that they are not blended with synthetic substances due to which their chemical composition is not changed.

Sugar is bad for you

The answer isn't a complete "yes," because it relies on the sort of sugar you consume. Sugar is classified into two types: added sugar and natural sugar. Added sugar encompasses both the common white granulated "table sugar" and concentrated sources such as fruit juice. You eat calories without consuming any nutrients or fiber when you ingest these sweets. This form of sugar is referred to as "bad sugar." Simple sugars are present naturally in entire foods, together with vitamins, minerals, protein, phytochemicals, and fiber. The natural sugar found in complete foods is referred to as "good sugar."

Avoid all processed foods

Processed foods to avoid include those with a high-fat content, a high sugar content, a low fiber content, and a high salt content. Providentially, goods are mandated to include nutrition information, so reading the back of the packaging will help you avoid overeating it. Examine the foods' fat, sodium, fiber, and sugar levels. If they exceed the advised limit, you should either avoid them or eat only a modest piece of them. One must not avoid processed food entirely; else, your diet would have next to nothing in it.

Food Engineering, A Wave to Future

From reaping up the fresh fruits and vegetables from the farm to putting them on your plate, a food engineer is liable for ensuring that everything is running smoothly and on the utmost hygiene levels.

Food Engineering is a broad field compromising the diversified principles of engineering, mathematics, and science. The applications range from food distribution, manufacturing, and storage to packaging and preservation on a broader industrial scale.

What Food Engineers really do?

Food engineers provide premium services in areas like Quality Assurance and Management to assure that the food is safe to consume. For efficient processing and preservation of food, a food engineer is responsible for designing a faster and more productive food production and packaging system that is both environment and human friendly.

Positions of Food Engineers

From being a Quality Lab Assistant, Assistant Plant Manager, Junior Food Technologist, Food inspector to Senior Quality Officer and Head Branch Manager, you can witness a food engineer applying their knowledge to bring the best out of the tons of raw materials in various food industries and food authorities. A fascinating fact is you can get hired by the Government Food Authorities as a Food Inspector, so run and raid your favorite restaurants quickly.

Scope of Food Engineering

Where there's a will, there's a way!

With technological advancement around the globe, food engineers who keep polishing their knowledge and skills beforehand receive a lucrative income from many top-notch industries, even in Pakistan. So, as food engineers, it's all our choice whether we want to upgrade ourselves or not.

Publishers' VIEW

It's fine to topple if you want to climb rather than cede.

Umema Afzal
Head Documentations

Silence is the best rebuttal and calm is your friend.

Muhammad Salman
Co-Head Documentations

Always be grateful for what you have, and never let the future disturb you!

Wareesha Zia
Cohead Documentations

Trust the process of journey, not the destination.

Quratulain Hasan
Member Documentations

Sometimes change Is necessary to complete.

Alina Fatima
Member Documentations

The harder you work, the more good luck you seem to have.

Sahar Batool
Member Documentations

GRAPHICS

Laiba Habib

HEAD GRAPHICS

Fatima Chaudhry

CO-HEAD GRAPHICS

Rabbia Shahid

CO-HEAD GRAPHICS

CREDITS

SOCIETY OF FOOD ENGINEERS

SOCIETY OF FOOD ENGINEERS

TENURE 2021-2022 **SEPTEMBER 2022**

Trying every day harder and amending every impossible possible has always been a desire of the team SOFE. Beginning never portrays the elite consequences, but the struggle behind always follows up and brings the best out of it.
We the team of SOFE are thoroughly striving tough not to only succeed but to achieve our goals and give rise to continuous improvement to make massive prosperity as Food Engineers.
“Work hard in silence; let success make the noise.”
- Frank Ocean

FOUNDING MEMBERS OF SOFE