SOUTHEAST ASIA-EUROPE
JOINT FUNDING SCHEME FOR
RESEARCH AND INNOVATION

Ms/Mr First Name Last Name

Organisation

Country

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Select Topic 1/2/3

Brokerage Event – 9th Call

03 October 2024

My and my institution's area of expertise

Name:
Dr. Khajornsak Nakpan

Position:
Lecturer/ Innovative Fashion Designer

Unit:
The Faculty of Decorative Arts

Organisation:
Silpakorn University

City: Bangkok
Country: Thailand

E-Mail: **khajornsaknakpan@gmail.com**

Expertise:

Khajornsak Nakpan, PhD, is an expert in textile design, fashion coloring, visual merchandising, and design.

He specializes in fostering creativity within the industry, with a focus on innovative and sustainable fashion solutions. Currently, he serves as a Curriculum Member of the Doctor of Philosophy Program in Design and the Master of Fine Arts Program in Design at the Faculty of Decorative Arts, Silpakorn University in Bangkok, Thailand.

Additionally, he works as a skillful in fashion design strategy, textile innovation, and visual merchandising at Thai Wacoal Public Company Limited.

My and my institution's area of expertise

Expertise:

Silpakorn University, specializes in design, arts, cultural studies, and innovative practices that combine traditional craftsmanship with contemporary needs. With a strong focus on sustainability, Silpakorn promotes creative solutions that address environmental and cultural preservation challenges. The programs emphasize hands-on experience, fostering creativity through the integration of time-honored techniques and cutting-edge technology, preparing students to meet the evolving demands of global industries while maintaining a deep respect for cultural heritage.

My proposed Research Idea for the 9th JFS Call

Research Question:

'*Thematic Field*' The project focuses on sustainable fashion and textile innovation, specifically the use of synthesized biomaterials from local resources to develop new, environmentally friendly, and culturally resonant textile substitutes.

Proposed Project Activity:

The synthesis process of bio-melanin fibers utilizes soil bacteria to produce melanin naturally, eliminating the need for synthetic dyes and harmful chemicals commonly used in traditional textile production. This process is not only energy-efficient but also dramatically reduces water usage. Conventional textile dyeing and finishing are among the largest sources of industrial water pollution, often releasing toxic chemicals into municipal wastewater systems. In contrast, bio-melanin fibers are produced in a closed-loop system that generates no hazardous wastewater, thereby significantly reducing the burden on industrial wastewater treatment facilities.

My proposed Research Idea for the 9th JFS Call

Proposed Research Activity:

Traditional textile manufacturing processes, especially dyeing, contribute substantially to global water pollution, with the industry consuming and contaminating millions of liters of water daily. The bio-melanin fiber production process avoids these steps, resulting in minimal water consumption and no chemical-laden wastewater. This reduction in wastewater not only eases the load on municipal treatment plants but also aligns with global efforts to promote water conservation and reuse. Industrial facilities that integrate bio-melanin production can drastically cut their water footprint and improve the quality of water returned to the environment, supporting sustainable water management practices.

The integration of bio-melanin fibers into textile production supports a circular economy approach by promoting the reuse and recycling of resources, including water. Since the bio-melanin production process generates no toxic effluents, the water used can be easily treated and recycled within the production cycle or redirected for other industrial uses. This contrasts sharply with conventional textile processes, where wastewater often requires extensive treatment before it can be reused or safely discharged. By reducing the need for complex wastewater treatment, bio-melanin fibers help lower operational costs and environmental impacts associated with industrial water management.

Project Consortium

My organisation:
Silpakorn University

Role:
Silpakorn University will lead the research and development of innovative materials and designs, while Thai Wacoal will contribute expertise in fashion design, production, and market implementation. Other partners will provide research insights and facilitate cross-regional knowledge exchange.

Further existing partners (if any):

Partner 1:

Rajamangala University of Technology Phra Nakhon, Thailand

Expertise: Contributes expertise in sustainable engineering, wastewater treatment, and exploring Carbon Credit Mechanism

Role: Researcher

Partner 2: Pratt Institute, United State of America

Expertise: Integrating innovation, sustainability, and interdisciplinary approaches to foster creativity and critical thinking.

Role: Supervisor

Project Consortium

Partners that we are seeking for our project consortium:

Region: Southeast Asia (National University of Laos)

Expertise: Provides insights into local climate challenges and fosters regional partnerships for bio-melanin fiber adoption policy.

Role: Researcher

Region: Europe (Textiles Circularity Centre, Royal College of Art, UK)

Expertise: Enhancing material security by circularising textile resources, driving innovation and growth in textiles, SME apparel, and tech sectors, while reducing import reliance and supporting a circular economy.

Role: Supervisor

Project Consortium

Partners that we are seeking for our project consortium:

Region: Europe (Pierre and Marie Curie University)

Expertise: A world-class research institution spanning diverse fields, including Biology, Chemistry, Medicine, Physics, Engineering, Genetics, Environmental Science, Computer Science, Liberal Arts & Social Sciences, and Quantum and Particle Physics.

Role: Supervisor

Region: Europe (Friedrich-Alexander-Universität Erlangen-Nürnberg)

Expertise: A leading German university renowned for research and innovation, offering a Materials Science and Engineering program with in-depth study of metals, ceramics, polymers, and composites, emphasizing both theoretical knowledge and practical research in advanced facilities.

Role: Supervisor