

## Preface

This proceeding contains selected peer-reviewed papers presented at the 5<sup>th</sup> International Conference on Science and Technology (ICST) 2019, held on July 30-31, 2019 at Eastparc Hotel, Yogyakarta, Indonesia. This year the conference had seven symposia there were (1) Life Sciences, Materials, and Applied Chemistry, (2) Computer and Information Technology, (3) Electronics, Communication, Control, and Instrumentation, (4) Environmental and Earth Science, (5) Mechanical and Industrial Engineering, (6) Power and Energy, and (7) Remote Sensing and Geomatics.

This volume of proceedings was selected from papers of the Life Sciences, Materials, and Applied Chemistry Symposium. This will provide an opportunity for readers to connect with a selection of refereed papers that were presented in the 5<sup>th</sup> ICST 2019 conference. The papers were grouped into 7 chapters and picked up based on the multiple dimensions of the properties of materials. The Life Sciences, Materials, and Applied Chemistry Symposium alone received 127 contributing papers.

We thank all the members of the conference committee and reviewers for advice given to the successful conference and for efforts to improve the quality of papers selected for conference program and volume for publication. We do hope that the proceedings will contribute well to the advance of chemistry, mainly in the field of material science. Also, we are looking forward to welcoming the contributing authors to the Sixth International Conference on Science and Technology, which is going to be run in August 2020.

## Committees

**Chairman:** Dr.Eng. Sunu Wibirama (UGM, Indonesia)

**Co-chairman:** Dr.Eng. Ahmad Kusumaatmaja (UGM, Indonesia)

**Secretary:** Ratih Fitria Putri, Ph.D. (UGM, Indonesia)

### Organizing Committee

Sunu Wibirama, Dr. Eng. (UGM, Indonesia), Chairman

Ahmad Kusumaatmaja, Dr. Eng. (UGM, Indonesia), Co-Chairman

Muhammad Idham Darussalam Mardjan, Dr. (UGM, Indonesia)

Tutik Dwi Wahyuningsih, Ph. D (UGM, Indonesia)

Indriana Kartini, Ph.D. (UGM, Indonesia)

Melati Khairuddean, Ph.D (Universiti Sains Malaysia, Malaysia)

Roto Roto, Ph.D. (UGM, Indonesia)

Laurent Commeiras. Prof. (Institut des sciences moléculaires de Marseille, France)

Dwi Siswanta, Ph.D. (UGM, Indonesia)

Julius Motuzas, Prof (The University of Queensland, Australia)

Tyas Utami, Dr. (UGM, Indonesia)

### Advisory Board

Ika Dewi Ana, drg. Ph.D. (Vice Rector, Universitas Gadjah Mada (UGM), Indonesia)

Johan Debayle, Prof. Dr. (Institut Mines-Telecom, France)

Widodo, Ph.D. (UGM, Indonesia)

Kurnianingsih, Dr. (IEEE Indonesia Section, Indonesia)

Tri Rini Nuringtyas, Dr. (UGM, Indonesia)

Satoshi Muraki, Prof. Dr. (Kyushu University, Japan)

Rohana Adnan, Prof. Dr. (Universiti Sains Malaysia, Malaysia)

Mutiah Amini, Dr. (UGM, Indonesia)