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Objectives

I am experienced in surface science, self-assembled mono and multilayers, thin film engineering, coating, developing of metal oxide, preparation of nanomaterials, photocatalysis, photochemistry, micro-engineering, and photolithography. I am seeking a research opportunity such as postdoctoral, research assistance position or internship that enables me to conduct the research in relevant experiences.

Research Interests

- **Development and application of nanomaterials (photocatalysis, biomedical sensing and solar energy applications).**
- **Surface science and engineering (Controlling the chemistry and properties of surfaces for relevant technologies).**
- **Development of thin films and self-assembled monolayers (SAMs) and their relevant technologies.**
- **Microengineering based on lithography through bottom-up and top-down approaches.**
- **Photocatalysis and water remediation.**

Academic Experiences

Duration dd/mm/yyyy	**Institute**	**Degree** *(Major)* & details
26/09/2017 – 30/09/2018	**Kyoto University**	**Postdoc researcher** - Nanoscopic Surface Architecture Laboratory - Research theme "Interfacial engineering towards selective metal deposition"
01/04/2014 – 25/09/2017	**Kyoto University**	**Ph.D. degree** *(Materials Science and Engineering)* - Nanoscopic Surface Architecture Laboratory - Supervisor: Prof. Dr. Hiroyuki Sugimura - Thesis Title "*Vacuum Ultraviolet Light Irradiation towards Photochemical Surface Architectures*"
03/10/2013 - 31/03/2014	**Kyoto University**	**Research student** *(Nondegree)* - Nanoscopic Surface Architecture Laboratory - Supervisor: Prof. Dr. Hiroyuki Sugimura
01/12/2010 – 01/09/2013	**Assiut University**	**M.Sc.** (*Organic Chemistry*) - Grade of courses: 88.9 %. - Supervisors: Prof.Dr. Aboel-Magd Abdel-Wahab & Prof.Dr. Nabil Khamis - Thesis Title "*Phytochemical Studies on Siwi and Tamr Phoenix Dactylifera Fruits*"
01/09/2004 – 24/07/2008	**Assiut University**	**B.Sc. degree** *(Chemistry)* - Grade: Very good with honor (Grade: 83.3 %).

Work Experiences

Duration dd/mm/yyyy	**Institute**	**Position** *(topic)* & duties
25/02/2019 - Now	**Assiut University**	**Lecturer (Materials Science)** - Teaching courses and supervising graduation projects for undergraduate students. - Supervising the master projects for graduate students

26/09/2017 - 30/09/2018	**Kyoto University**	**Researcher** - Nanoscopic Surface Architecture Laboratory - Research theme "Interfacial engineering towards selective metal deposition"
30/09/2013 – 25/02/2019	**Assiut University**	**Research Assistant (Organic Chemistry)** - Participating in teaching the practical courses of organic chemistry and analytical chemistry for undergraduate students.
26/04/2009 – 30/09/2013	**Assiut University**	**Demonstrator (Organic Chemistry)** - Participating in teaching the practical courses of organic chemistry, petroleum chemistry, chromatographic techniques, biochemistry and analytical chemistry for undergraduate students, Assiut University.
01/08/2008 - 26/04/2009	- **No job** Application for the academic job (Demonstrator) that I appointed by ministry of higher education and Assiut University	

Research Experiences

- **Self-assembled monolayers (SAMs) and multilayers.** Fabrication of SAMs and multilayers on Au, Ag, Cu, Sn, Si, oxides and ceramics from different precursors.
- **Surface chemistry**. Quantifying and control the functional groups at the surfaces for enhancing their properties such as wettability, friction, adhesion, and morphology.
- **Photolithography.** Fabrication of positive and negative tone micropatterns with several nanometers in height using vacuum ultraviolet light.
- **Micro-engineering using bottom-up and top-down approaches.** Organosilane micropatterns were fabricated on the surfaces of polymers and silicon substrates with assisting by VUV photolithography.
- **Developing of metal oxides at room temperature.** MOS micropatterns were fabricated through VUV light irradiation in an atmospheric environment.
- **Phytochemistry** "During master degree"**.** Extraction, separation, purification, and quantification of different chemical components in plants.

- **Biological activities** "during master degree"**.** Such as antimicrobial, antifungal, antioxidants and cytotoxicity of plant extracts.

  The below instruments were used;

  - **Different mode atomic force microscopy (AFM):** such as tapping-mode, lateral force microscopy (LFM) and Kelvin probe force microscopy (KPFM) and conductive-mode.
  - **X-ray photoelectron spectroscopy (XPS) & angle resolved XPS(ARXPS).**
  - **ATR-FTIR and transmission-FTIR & IRRAS.**
  - **SEM, TEM, ellipsometry, Raman spectroscopy, XRD and WCA goniometry**.
  - **Different chromatographic techniques:** TLC, paper chromatography (PC), column chromatography (CC), gas chromatography (GC), and HPLC.
  - **Analytical methods:** such as mass spectroscopy, H^1 and C^{13} NMR, IR.

Awards, Fellowships, and Training

- **Egyptian Government Scholarship for PhD study**, Kyoto University, Japan from April.2014 to Sept.2017).
- **Egyptian Government Scholarship for training** at Kyoto University (Oct.2013-March.2014) "Six months as a research student in Nanoscopic Surface Architecture Laboratory (NSA)".
- Training course for different analytical, purification, separation and identification techniques used in chemistry, Assiut University, (Aug.2012).
- Workshop of teaching ability development, Assiut University, (Sept.2011).
- **DAAD Fellowship**, carl von Ossietzky university of Oldenburg in Prof.Dr. Gunther Wittstock research group for two months (Jul.2007 to Sept.2007).
- Internship in Training internship in **CEMEX cement production** (Jul.2006).

Published Articles

1. **Ahmed I. A. Soliman,** Cheng-Tse Wu, Toru Utsunomiya, Takashi Ichii, and Hiroyuki Sugimura, Room temperature direct patterning of nanocrystalline zinc oxide on flexible

polymer substrates through vacuum ultraviolet light irradiation, *Thin solid films,* **In press.** DOI: 10.1016/j.tsf.2020.138166

2. Cheng-Tse Wu, **Ahmed I. A. Soliman**, Yudi Tu, Toru Utsunomiya, Takashi Ichii and Hiroyuki Sugimura, Fabrication of TiO_2 Micropatterns on Flexible Substrates by Vacuum-ultraviolet Photochemical Treatments, *Advanced Materials and Interfaces* **7**, (2020), 1901634 (1-9).

3. Cheng-Tse Wu, **Ahmed I. A. Soliman**, Toru Utsunomiya, Takashi Ichii and Hiroyuki Sugimura, Formation of submicron-sized silica patterns on flexible polymer substrates based on vacuum ultraviolet photo-oxidation, *RSC Advances* **9***,* (2019), 32313-32322*.* DOI: 10.1039/C9RA07256J

4. **Ahmed I. A. Soliman**, Toru Utsunomiya, Takashi Ichii and Hiroyuki Sugimura, 1,2 Epoxyalkane: Another Precursor Molecules for Fabricating Alkoxy Self-Assembled Monolayers on Hydrogen-Terminated Silicon (111), *Langmuir* **34***,* (2018), 13162-13170. DOI: 10.1021/acs.langmuir.8b02717. ***(Supplementary cover)***.

5. **Ahmed I. A. Soliman**, Toru Utsunomiya, Takashi Ichii and Hiroyuki Sugimura, Vacuum Ultraviolet Treatment of Acid- and Ester- Terminated Self-Assembled Monolayers: Chemical Conversions and Friction Reduction, *Langmuir* **34**, (2018), 3228–3236. DOI: 10.1021/acs.langmuir.7b04327.

6. **Ahmed I. A. Soliman**, Yudi Tu, Toru Utsunomiya, Takashi Ichii and Hiroyuki Sugimura, Low Damage Reductive Patterning of Oxidized Alkyl Self-Assembled Monolayers through Vacuum Ultraviolet Light Irradiation in an Evacuated Environment, *Langmuir* **33**, (2017), 10829-10837, DOI: 10.1021/acs.langmuir.7b02739.

7. **Ahmed I. A. Soliman**, Toru Utsunomiya, Takashi Ichii and Hiroyuki Sugimura, Vacuum Ultraviolet Trimming of Oxygenated Functional Groups from Oxidized Self-Assembled Hexadecyl Monolayers in an Evacuated Environment, *Applied Surface Science* **416**, (2017), 971-979, DOI: 10.1016/j.apsusc.2017.04.037.

8. **Ahmed I. A. Soliman**, Sho Kokufu, Toru Utsunomiya, Takashi Ichii and Hiroyuki Sugimura, Photochemical Preparation of Alkoxy Self-Assembled Monolayers on Si from 1,2-Epoxyalkane Molecules, *Chem.Lett.* **45**, (2016), 561–563, DOI: 10.1246/cl.160064.

9. **Ahmed I. A. Soliman**, Takashi Ichii, Toru Utsunomiya and Hiroyuki Sugimura, Chemical conversion of self-assembled hexadecyl monolayers with active oxygen species generated by vacuum ultraviolet irradiation in an atmospheric environment, *Soft Matter* **11**, (2015), 5678–5687, DOI: 10.1039/C5SM00823A.

Articles under Publication

1. **Ahmed I. A. Soliman**, Toru Utsunomiya, Takashi Ichii and Hiroyuki Sugimura, Vacuum Ultraviolet Photomodification for Bottom Up Selective Assembling of Organosilanes Influence of Temperature and Moisture, ***Under preparation.***

Conferences

1. Young Researchers Scientific Conference, Apr.2012, Assiut University, Assiut, Egypt (Poster presentation).
2. The 1st Conference on Science Diplomacy and Development in Chemistry, Alexandria University, Alexandria, Nov.2013 (Poster presentation).
3. Joint Symposium on Materials Science and Engineering for the Next Generation, Jun.2014, Sendai, Japan (Oral presentation).
4. The 130th Meeting of Surface Finishing Society of Japan, Sept.2014, Kyoto University, Kyoto, Japan (Oral presentation).
5. The 63rd Symposium on Macromolecules, Sept.2014, Nagasaki University, Nagasaki, Japan (Poster presentation).
6. The 64th SPSJ Annual Meeting, Jun.2015, Sapporo, Japan (Oral presentation).
7. Pacifichem 2015, Dec.2015, Hawaii, USA (Poster presentation).
8. The 16th International Conference on Organized Molecular Films (ICOMF16), Jul.2016, Helsinki, Finland (Poster presentation).
9. AVS 63rd International Symposium & Exhibition, Nashville, Tennessee, USA, Nov.2016 (Oral presentation).
10. Symposium on Surface Science & Nanotechnology-25th Anniversary of SSSJ-Kansai-, Kyoto, Japan, Jan.2017 (Oral presentation).

References

1. **Prof.Dr. Hiroyuki SUGIMURA**

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