

# SAJID HUSSAIN



## RESEARCH DISCIPLINES

Chemical Engineering      Process Engineering      Environmental Engineering      Materials Chemistry

## RESEARCH EXPERTISE & INTERESTS

Catalysis & Reaction Engineering      Catalyst Design & Optimization      Process Design & Optimization      Machine Learning in Catalysis  
Advanced Oxidation Processes      Water & Wastewater Treatment      Separation Processes      Resource Recovery  
Organic & Inorganic Synthesis      Analytical Chemistry      Ionic Liquids      Sustainable Energy

## EDUCATIONAL QUALIFICATIONS

Feb 2018 - Jan 2021      **PhD Environmental & Energy Engineering**      University of Udine, Italy  
Oct 2014 - Feb 2017      **M.Sc. Chemical Engineering**      University of the Punjab, Pakistan  
Dec 2008 - May 2013      **B.Sc. Chemical Engineering**      University of the Punjab, Pakistan  
Sep 2006 – Aug 2008      **F.Sc. Pre-Engineering**      Govt. College Civil Lines Lahore, Pakistan

## PROFESSIONAL EXPERIENCE

Sep 2023 - Present      **Assistant Professor (RTDa)**      University of Padova, Italy  
Apr 2023 – Aug 2023      **Postdoctoral Fellow**      University of Padova, Italy  
May 2021 – Mar 2023      **Postdoctoral Fellow**      University of Udine, Italy  
Feb 2018 - Jul 2021      **PhD Fellow**      University of Udine, Italy  
Oct 2016 - Sep 2017      **Lecturer**      University of the Punjab, Pakistan  
Aug 2015 - July 2016      **Research Assistant**      University of the Punjab, Pakistan  
July 2013 - Jun 2014      **Production Engineer**      Berger Paints Pvt. Ltd. Pakistan

## DISSERTATION & THESIS

UNIUD - 2021      [Heterogeneous Catalyzed Advanced Oxidation Processes for the Treatment of Liquid Wastes.](#)  
PhD Dissertation - Polytechnique Department of Engineering and Architecture, University of Udine  
ICET - 2017      [Synthesis, Characterization and Applications of Ionic Liquids for Energy and Environment.](#)  
Master's Thesis - Chemical Engineering Department, University of the Punjab  
ICET - 2013      [Comprehensive Techno-Economic Wastewater Treatment Plant Design of an Oil Refinery.](#)  
Bachelor's Thesis - Chemical Engineering Department, University of the Punjab

## GIVEN SEMINARS

Jul - 2021      [Heterogeneous Catalyzed Fenton Process Over Cu/ZrO<sub>2</sub> For Enhanced Liquid Waste Treatment.](#)  
SIDISA - XI International Symposium On Environmental Engineering, Turin, Italy  
Jun - 2021      [Liquid Waste Treatment by Fenton-like Process over Copper and Iron Based Catalysts.](#)  
IWA - 5th International Water Association Conference, Milan, Italy  
Oct-2020      [Sustainable Wastewater Treatment Technologies, Circular Economy Perspective.](#)  
UNIUD - 33rd Annual Doctoral Meeting, Udine, Italy

## RESEARCH PUBLICATIONS

- ACS** Industrial & Engineering Chemistry Research  
**Sajid Hussain**, Eleonora Aneggi, Stefano Maschio, Marco Contin, Daniele Goi  
"Steel Scale Waste as a Heterogeneous Fenton-like Catalyst for the Treatment of Landfill Leachate"  
<https://doi.org/10.1021/acs.iecr.1c01901>
- Elsevier** Journal of Water Process Engineering  
**Sajid Hussain**, Eleonora Aneggi, Alessandro Trovarelli, Daniele Goi  
"Heterogeneous Fenton-like oxidation of ibuprofen over zirconia-supported iron and copper catalysts: effect of process variables"  
<https://doi.org/10.1016/j.jwpe.2021.102343>
- Springer** Environmental Chemistry Letters  
**Sajid Hussain**, Eleonora Aneggi, Daniele Goi  
"Catalytic activity of metals in heterogeneous Fenton-like oxidation of wastewater contaminants: a review"  
<https://doi.org/10.1007/s10311-021-01185-z>
- ACS** ES&T Water  
**Sajid Hussain**, Eleonora Aneggi, Vito Gelao, Sara Briguglio, Michele Mattiussi, Walter Baratta, Daniele Zuccaccia, Alessandro Trovarelli, Daniele Goi  
"Potential Residual Toxicity of the Ibuprofen Oxidative Degradation Products by HPLC–MS and Principal Component Analysis"  
<https://doi.org/10.1021/acsestwater.3c00630>
- MDPI** Molecules  
**Sajid Hussain**, Eleonora Aneggi, Sajid Hussain, Walter Baratta, Daniele Zuccaccia, Daniele Goi  
"Enhanced Heterogeneous Fenton Degradation of Organic Dyes by Bimetallic Zirconia-Based Catalysts"  
<https://doi.org/10.3390/molecules29092074>
- MDPI** Catalysts  
**Sajid Hussain**, Eleonora Aneggi, Alessandro Trovarelli, Daniele Goi  
"Iron and copper-based bimetallic catalysts for Fenton-like oxidation of ibuprofen"  
<https://doi.org/10.3390/catal11111383>
- Springer** Environmental Science and Pollution Research  
**Sajid Hussain**, Eleonora Aneggi, Clara Comuzzi, Diego Baderna, Daniele Zuccaccia, Alessandro Trovarelli, Daniele Goi  
"Abatement of the ecotoxicological risk of landfill leachate by heterogeneous Fenton-like oxidation"  
<https://doi.org/10.1007/s11356-022-23682-6>
- MDPI** Catalysts  
**Sajid Hussain**, Eleonora Aneggi, Alessandro Trovarelli, Daniele Goi  
"Removal of Organics from Landfill Leachate by Heterogeneous Fenton-like Oxidation over Copper-Based Catalyst"  
<https://doi.org/10.3390/catal12030338>
- Elsevier** Journal of Environmental Chemical Engineering  
**Sajid Hussain**, Eleonora Aneggi, Sara Briguglio, Michele Mattiussi, Vito Gelao, Igino Cabras, Luciano Zorzenon, Alessandro Trovarelli, Daniele Goi  
"Enhanced ibuprofen removal by heterogeneous-Fenton process over Cu/ZrO<sub>2</sub> and Fe/ZrO<sub>2</sub> catalysts"  
<https://doi.org/10.1016/j.jece.2019.103586>
- Elsevier** Arabian Journal of Chemistry  
**Sajid Hussain**, Amir Shafeeq  
"Solvent effectiveness factor: A new correlation to study the influence of solvent, temperature, and stirring rate on synthesis yield of Ionic Liquids"  
<https://doi.org/10.1016/j.arabjc.2019.04.005>
- Elsevier** Heliyon  
**Sajid Hussain**, Awais Sattar Ghouri, Ashfaq Ahmad  
"Pine cone extract as natural coagulant for purification of turbid water"  
<https://doi.org/10.1016/j.heliyon.2019.e01420>
- SCS** Journal of the Serbian Chemical Society  
**Sajid Hussain**, Amir Shafeeq, Usamah Anjum  
"Solid–liquid extraction of rice bran oil using binary mixture of ethyl acetate and dichloromethane"  
<https://doi.org/10.2298/JSC170704023H>

## CONFERENCES

- IWA** Milan, Italy  
**2021**  
**Sajid Hussain**, Eleonora Aneggi, Daniele Goi  
"Liquid waste treatment by Fenton-like process over copper-based catalyst."
- SIDISA** Turin, Italy  
**2021**  
**Sajid Hussain**, Eleonora Aneggi, Daniele Goi  
"Heterogeneous-Fenton Process Over Cu/ZrO<sub>2</sub> For Enhanced Liquid Waste Treatment."
- CRAC-HCF** Helsinki, Finland  
**2020**  
**Sajid Hussain**  
"Chemicals Regulatory Annual Conference & Helsinki Chemicals Forum."
- IWA** Venice, Italy  
**2019**  
**Sajid Hussain**  
"3rd IWA Resource Recovery Conference 2019."
- EPO** Munich, Germany  
**2019**  
**Sajid Hussain**  
"Seminar on European Patents."

## REVIEWING ACTIVITIES

Elsevier	2021	Separation and Purification Technology
Elsevier	2021	Environmental Chemical Engineering
Elsevier	2021	Catalysis Communications
MDPI	2020	Water

## TEACHING EXPERIENCE

Master's Program	2024 - To Date	Industrial Processes for Biobased and Specialty Chemicals
Master's Program	2023 - 2024	Green Chemistry and innovative industrial Processes
Master's Program	2024	Polymer Recycling Techniques for Circular Economy
PhD Program	2024	Polymer Characterization Techniques

## COURSES

Stanford, USA	2019	Understanding and Tuning Catalytic Materials using Nanocrystal Precursors
MIT, USA	2018	Continuum simulations of dense granular flows
CISM, Italy	2018	Fluid Dynamics Effects On Particle Formation In Crystallization Processes
UNIUD, Italy	2018	English For Academic Purposes.

## HONORS & AWARDS

Postdoctoral Fellowship	2022-2023	Postdoc	(Fully Funded)
UNIPD Scholarship	2018 - 2021	PhD Program	(Fully Funded)
HEC Pakistan Fellowship	2014 - 2016	Master's Program	(Fully Funded)
Punjab University Grant	2015	Research Grant	(Project Award)
Punjab Govt. Scholarship	2009 - 2013	Bachelor's Program	(Partially Funded)
Punjab Govt. Scholarship	2006 - 2008	Higher Secondary	(Partially Funded)
Best Poster Award (UNIUD)	2019	PhD Program	
Laptop Award (HEC)	2015	Master's program	
Laptop Award (Punjab Govt)	2015	Bachelor' Program	

## ANALYTICAL SKILLS

X-ray diffraction analysis ( <b>XRD</b> )	BET surface area	Scanning Electron Microscopy ( <b>SEM</b> )
Temperature Programmed Reduction ( <b>TPR</b> )	Infrared Spectroscopy ( <b>IR</b> )	Total Organic Carbon ( <b>TOC</b> )
Ultraviolet-visible Spectroscopy ( <b>UV-Vis</b> )	Fluorescence Spectroscopy	Water & Wastewater Analysis
Nuclear Magnetic Resonance Spectroscopy ( <b>NMR</b> )	Inductively Coupled Plasma-Atomic Emission Spectroscopy ( <b>ICP-AES</b> )	
	High-performance liquid chromatography ( <b>HPLC</b> )	

## PROGRAMMING SKILLS

Windows Operating Systems (8 /10 /11)	Microsoft Office(Word/Excel/ PowerPoint)	Aspen Hysis
ACD Labs ( Chemical Structures )	ChemCad	Masterlab Mnova
Origin Lab	Python (Beginner)	

## LANGUAGES

English	Fluent (IELTS IDP Australia = 7.5)
Urdu	Mother Tongue
Punjabi	Native Language
Italian	Basic Comprehension

## REFERENCES

Will be provided upon request.