# University Scholar Conference: Engineering and Innovation (USC 2022)

IOP Conference Series: Materials Science and Engineering Volume 1279

Kathmandu, Nepal 17 – 18 May 2022

ISBN: 978-1-7138-7142-2

ISSN: 1757-8981

### Printed from e-media with permission by:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

This work is licensed under a Creative Commons Attribution 3.0 International Licence. Licence details: http://creativecommons.org/licenses/by/3.0/.

No changes have been made to the content of these proceedings. There may be changes to pagination and minor adjustments for aesthetics.

Printed with permission by Curran Associates, Inc. (2023)

For permission requests, please contact the Institute of Physics at the address below.

Institute of Physics Dirac House, Temple Back Bristol BS1 6BE UK

Phone: 44 1 17 929 7481 Fax: 44 1 17 920 0979

techtracking@iop.org

## Additional copies of this publication are available from:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571 USA Phone: 845-758-0400

Fax: 845-758-2633

Email: curran@proceedings.com Web: www.proceedings.com

# TABLE OF CONTENTS

_	-	
D	- L	
		മറല

т.	<b>T</b>	•	<b>C</b>	
Peer	R e	MAN	Statemen	ıŧ
1 001	$\mathbf{r}$	VIC W	Statemen	ıι

Comparative Analysis of Radiant and Radiator Heating System for a Residential Building	1
Numerical Study of a Coil Pump and Comparison with Field Measurement	16
Assessing the Performance of a Demonstrative Hydrogen Fuel Cell Power Train in the Chassis of an Internal Combustion Engine Vehicle	27
Knee Flexion/Extension Angle Measurement for Gait Analysis Using Machine Learning Solution "MediaPipe Pose" and Its Comparison with Kinovea®	37
Parametric Modelling and Optimization of Alkaline Electrolyzer for the Production of Green Hydrogen	44
Simulation and Field-Based Study of Thermal Performance of a Building - A Case Study	56
Techno-Economic Analysis of Energy Systems in Thakle Namuna Basti - A Case Study	61
Production of Fuels by Pyrolysis of Waste Plastics: Technical Notes	80
Numerical Investigation of Flow Behaviour and Erosion Potential in the Side-Wall Clearance Between Guide Vane and Runner	87
Simulation of Passive Thermal Retrofitting Techniques in an Earthquake-Resistant Building: A Case Study of a Building in Thakle Namuna Basti, Melamchi, Nepal	101

#### **Author Index**