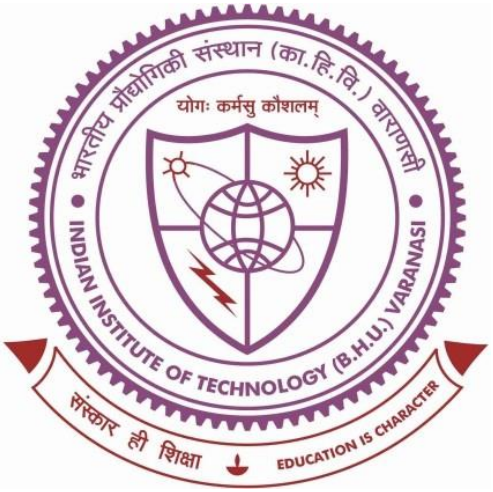
STUDIES ON TRIBOLOGICAL BEHAVIOUR OF Ni_3Al BASED SELF LUBRICATING COMPOSITES



Thesis submitted in partial fulfillment for the Award of Degree

Doctor of Philosophy

By

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CERTIFICATE

It is certified that the work contained in the thesis titled ***"STUDIES ON TRIBOLOGICAL BEHAVIOUR OF Ni_3Al BASED SELF LUBRICATING COMPOSITES"*** by ***"NITISH KUMAR MAHTO"*** has been carried out under our supervision and that this work has not been submitted elsewhere for a degree.

It is further certified that the student has fulfilled all the requirements of Comprehensive Examination, Candidacy, and SOTA for the award of Ph.D. Degree.

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DECLARATION BY THE CANDIDATE

I, ***"Nitish Kumar Mahto"***, certify that the work embodied in this thesis is my own bonafide work and carried out by me under the supervision of ***"Prof. Sanjay Kumar Sinha and Prof. Rajnesh Tyagi"*** from ***"July 2018" to "December 2023"***, at the ***"Department of Mechanical Engineering"***, Indian Institute of Technology (BHU), Varanasi, India. The matter embodied in this thesis has not been submitted for the award of any other degree/diploma.

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It is certified that the above statement made by the student is correct to the best of our knowledge.

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(NITISH KUMAR MAHTO)

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List of abbreviations & symbols

Cu-*h*BN	:	Copper modified or doped *h*BN nanosheets
d	:	Interplanar spacing
2D	:	Two dimensional
EDS	:	Energy Dispersive X-ray spectroscopy
FE-SEM	:	Field Emission Scanning Electron Microscopy
g	:	Gram
hr.	:	Hour
HV	:	Vickers hardness
kHz	:	Frequency
K	:	Kelvin
min	:	Minute
mm^3/Nm	:	Wear rate
ml/min	:	Flow rate
mL	:	Milliliter
MPa	:	Mega Pascal
m/s	:	Sliding speed
n	:	Integer representing order of the diffraction
N	:	Normal load
rpm	:	Revolution per minute
RT	:	Room temperature
S	:	Sliding distance
SEM	:	Scanning electron microscopy
s	:	Second
TEM	:	Transmission electron microscope

V	:	Volume loss
VHPS	:	Vacuum hot press sintering
W	:	Wear volume loss
wt.%	:	Weight percentage
XPS	:	X- ray photoelectron spectroscopy
XRD	:	X- ray diffraction
°C	:	Degree Celsius
°C/min	:	Heating rate
%	:	Percentage
k	:	Wear coefficient
μm	:	Micrometer
μ	:	Coefficient of friction
λ	:	Wavelength of the x-ray
θ	:	Incident angle
γ	:	Delta