पेटेंट कार्यालय
शासकीय जर्नल

OFFICIAL JOURNAL
OF
THE PATENT OFFICE

निर्गमन सं. 41/2024	शुक्रवार	दिनांक: 11/10/2024
ISSUE NO. 41/2024	FRIDAY	DATE: 11/10/2024

पेटेंट कार्यालय का एक प्रकाशन
PUBLICATION OF THE PATENT OFFICE

(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :23/09/2024

(21) Application No.202411071811 A
(43) Publication Date : 11/10/2024

(54) Title of the invention : NANOFLUID-BASED COOLING SYSTEM FOR TURNING OPERATIONS AND A METHOD THEREOF

(51) International classification	:B23Q0011100000, B23Q0017090000, C09K0005100000, B23B0001000000, C10N0020060000
(86) International Application No Filing Date	:NA :NA
(87) International Publication No	: NA
(61) Patent of Addition to Application Number Filing Date	:NA :NA
(62) Divisional to Application Number Filing Date	:NA :NA

(71)**Name of Applicant :**
1)Dr Rahul Shukla
Address of Applicant :Assistant Professor, Mechanical Engineering Department, Bundelkhand University, Jhansi Uttar Pradesh India Jhansi ---------- ----------
2)Prof Arun Kumar Tiwari
3)Prof Sanjay Agarwal
Name of Applicant : NA
Address of Applicant : NA
(72)**Name of Inventor :**
1)Dr Rahul Shukla
Address of Applicant :Assistant Professor, Mechanical Engineering Department, Bundelkhand University, Jhansi Uttar Pradesh India Jhansi ---------- ----------
2)Prof Arun Kumar Tiwari
Address of Applicant :Professor, Mechanical Engineering Department, Institute of Engineering and Technology, Sitapur road, Lucknow Uttar Pradesh India 226021 Lucknow ---------- ----------
3)Prof Sanjay Agarwal
Address of Applicant :Retired Professor, Mechanical Engineering Department, BIET, Jhansi Uttar Pradesh India Jhansi ---------- ----------

(57) Abstract :
The invention presents a nanofluid-based cooling system and a method for turning operations, employing MoO3/water nanofluids to enhance machining performance. By using a Minimum Quantity Lubrication (MQL) system, the nanofluid is precisely applied to the cutting zone, reducing cutting forces, tool wear, and surface roughness while significantly lowering tool tip temperatures. MoO3 nanoparticles are synthesized and dispersed in a water-based fluid to optimize thermal conductivity and lubrication properties. Experimental results demonstrate a reduction in cutting forces by 15-25%, tool wear by 20-30%, and surface roughness by 10-15%. Refer to Figure 1

No. of Pages : 16 No. of Claims : 5