




# NTNU

# RICA HOTEL

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	TUESDAY JUNE 12 <sup>TH</sup>	WEDNESDAY JUNE 13 <sup>TH</sup>	THURSDAY JUNE 14 <sup>TH</sup>	FRIDAY JUNE 15 <sup>TH</sup>							
08:40 – 09:00	 <b>NTNU – Trondheim</b> Norwegian University of Science and Technology	PLENARY SESSION 2 <b>Prof. Nicholas Spencer</b>			PLENARY SESSION 3 <b>Prof. Rob Dwyer-Joyce</b>			PLENARY SESSION 4 <b>Ass. Prof. Karthikeyan Subramanian</b>			
09:00 – 09:20		Coffee			Coffee			Coffee			
09:20 – 09:40		Plenum 1	Plenum 2	Gamle Bybro	Plenum 1	Plenum 2	Gamle Bybro	Plenum 1	Plenum 2	Gamle Bybro	
		<u>Wear 1</u> M. Olsson	<u>Biotrib. 1</u> N. Papageorgiou	<u>Tribochemistry</u> S. Equey	<u>Mach. Elts 2</u> M. Wasilczuk	<u>Trib. Mtrls. 3</u> K. Subramanian	<u>Surf. Eng. 2</u> S. Jacobson	<u>Lubrication 3</u> K. Tønder	<u>Wear 2</u> B. Prakash	<u>Friction</u> I. Sivebæk	
09:40 – 10:00		<a href="#">29</a>	<a href="#">63</a>	60	<a href="#">97</a>	<a href="#">90</a>	<a href="#">111</a>	<a href="#">138</a>	<a href="#">71</a>	<a href="#">38</a>	
10:00 – 10:20		<a href="#">55</a>	85	<a href="#">80</a>	<a href="#">98</a>	<a href="#">146</a>	<a href="#">113</a>	<a href="#">143</a>	<a href="#">78</a>	42	
10:20 – 10:40		<a href="#">56</a>	<a href="#">91</a>	<a href="#">100</a>	136	<a href="#">154</a>	<a href="#">121</a>	<a href="#">155</a>		<a href="#">61</a>	
10:40 – 11:00		58	<a href="#">93</a>		162	<a href="#">159</a>	126	<a href="#">193</a>	184	<a href="#">84</a>	
11:00 – 11:20		<a href="#">67</a>		191		<a href="#">160</a>	<a href="#">128</a>		<a href="#">201</a>	<a href="#">142</a>	
11:20 – 11:40			Coffee			Coffee			Coffee		
			<u>Mach. Elts 1</u> Å. Kassman	<u>Trib. Mtrls. 2</u> A. Lehtovaara	<u>Abrasion 1</u> B. Prakash	<u>In-situ Trib.</u> S. Armada	<u>Ind. Trib. 2</u> K. Tønder	<u>Modelling 2</u> S. Dumoulin	<u>Mach. Elts 3</u> S. Andersson	<u>Modelling 3</u> S. Dumoulin	<u>Surf. Eng. 3</u> K. Holmberg
11:40 – 12:00		<a href="#">33</a>	36	<a href="#">35</a>	41	<a href="#">87</a>	<a href="#">122</a>	<a href="#">170</a>	<a href="#">174</a>	133	
12:00 – 12:20	REGISTRATION	48	<a href="#">40</a>	<a href="#">46</a>	<a href="#">74</a>	<a href="#">107</a>	129	176	<a href="#">185</a>	<a href="#">156</a>	
12:20 – 12:40		<a href="#">54</a>	<a href="#">66</a>	<a href="#">82</a>	<a href="#">125</a>	<a href="#">124</a>	137	CLOSURE			
12:40 – 13:00		95	<a href="#">72</a>		180	<a href="#">130</a>	<a href="#">163</a>				
13:00 – 13:40		WELCOME	LUNCH			LUNCH			LUNCH		
13:40 – 14:20	PLENARY SESSION 1 <b>Associate Prof. Takeshi Yamaguchi</b>	LUNCH			LUNCH			LUNCH			
	<u>Contacts 1</u> B. Gudde	<u>Trib. Mtrls. 1</u> U. Wiklund	<u>Surf. Eng. 1</u> H. Ronkainen	<u>Lubrication 2</u> T. Yamaguchi	<u>Modelling 1</u> D. Wiklund	<u>Abrasion 2</u> J. Hardell	<u>Contacts 2</u> S. Hogmark	<u>Lubricants</u> S. Eskildsen			
14:20 – 14:40	<a href="#">51</a>	<a href="#">171</a>	<a href="#">196</a>	<a href="#">81</a>	<a href="#">21</a>	<a href="#">86</a>	<a href="#">131</a>	<a href="#">22</a>			
14:40 – 15:00	<a href="#">57</a>	<a href="#">25</a>	<a href="#">17</a>	<a href="#">99</a>	<a href="#">24</a>	101	<a href="#">157</a>				
15:00 – 15:20	<a href="#">110</a>	<a href="#">27</a>	<a href="#">68</a>	<a href="#">117</a>		<a href="#">187</a>	<a href="#">32</a>				
15:20 – 15:40	Coffee		<a href="#">94</a>	<a href="#">153</a>	<a href="#">59</a>	<a href="#">158</a>	<a href="#">62</a>				
	<u>Industrial Trib. 1</u> I. Sivebæk	<u>Lubrication 1</u> P. Jolly	104		<a href="#">108</a>	183	<a href="#">65</a>				
15:40 – 16:00	<a href="#">26</a>	47		Coffee			Coffee				
16:00 – 16:20	<a href="#">77</a>	<a href="#">52</a>	POSTER SESSION			<u>Ice Trib.</u> S. Equey	<u>Tribocorrosion</u> N. Espallargas	<u>Biotrib. 2</u> A. Igual-Muñoz			
16:20 – 16:40	 <b>SINTEF</b>				<a href="#">105</a>	<a href="#">169</a>	<a href="#">109</a>				
16:40 – 17:00					<a href="#">168</a>	190	<a href="#">127</a>				
17:00 – 17:20					<a href="#">173</a>	45					

18:30 – CONCERT AT NIDAROS CATHEDRAL + RECEPTION

18:00 – SVERRESBORG MUSEUM

19:00 – CONFERENCE DINNER AT KRISTIANSTEN FESTNING

The numbers correspond to the paper numbers.



Tuesday 12 <sup>th</sup> August		
12:00	Registration	
13:00	Welcome	
13:40	Plenary session 1: Tribology and biomechanics of gait: to prevent slips and falls during walking <i>Associate Prof. Takeshi Yamaguchi</i>	
Room	R5	R7
	<u>Contacts 1</u> Chairman: B. Guddei	<u>Tribology of Materials 1</u> Chairman: U. Wiklund
14:20	A study of friction modifiers on airborne wear particles from wheel-rail contact (51)  S. Abbasi*, U. Olofsson <i>KTH, Sweden</i>	Temperature dependent changes of physicochemical and tribological properties of NBR elastomer upon ageing in hexadecane and DGDE (171)  M. Grahn, Z. Wang, O. Antzutkin, B. Prakash* <i>Luleå University of Technology, Sweden</i>
14:40	Fretting fatigue and friction of quenched and tempered steel in contact with bronze (57)  J. Hintikka*, A. Lehtovaara, C. Lönnqvist <i>Tampere University of Technology, Finland</i>	Wear behaviour of yttrium titanate ceramics under gross slip fretting conditions (25)  R. Waesche*, G. Czichholz, G. Steinborn <i>BAM, Germany</i>
15:00	Deterministic model for ploughing under rough contacts (110)  D.K. Karupannasamy*, M.B. De Rooij, D.J Schipper <i>University of Twente, Netherlands</i>	Tribological behavior of coated tungsten composites in sliding contact conditions with steel counter bodies (27)  T. Sander*, S. Tremmel, S. Wartzack <i>Friedrich-Alexander-University Erlangen-Nuremberg, Germany</i>
15:20	Break	
	<u>Industrial Tribology 1</u> Chairman: I. Sivebaek	<u>Lubrication 1</u> Chairman: P. Jolly
15:40	Friction surfacing of a cold work tool steel – microstructure and sliding wear behaviour (26)  S. Hanke*, M. Beyer, J. dos Santos, A. Fischer <i>University of Duisburg-Essen, Germany</i>	Tribology, rheology, and destruction of structures of stress sensitive fluids (47)  F. Wolf* <i>Anton Paar Germany GmbH, Germany</i>
16:00	Phase transformations in an Fe-Mn-Al-C alloy during tribology test (77)  J. Ramos*, G.A. Pérez <i>Universidad Autónoma de Occidente, Colombia</i>	Elastohydrodynamic analysis of Rayleigh step bearing in thin film hydrodynamic lubrication (52)  K. Yagi*, J. Sugimura <i>Kyushu University, Japan</i>
18:30	Concert at Nidaros Cathedral + Reception	

Wednesday 13 <sup>th</sup> June			
08:40	Plenary session 2: Lubricating surfaces with polymer brushes <i>Prof. Nicholas Spencer</i>		
09:20	Break		
Room	Plenum 1	Plenum 2	Gamle Bybro
	<u>Wear 1</u> Chairman: M. Olsson	<u>Biotribology 1</u> Chairman: N. Papageorgiou	<u>Tribochemistry</u> Chairman: S. Equey
09:40	Wear analysis on rollers of nodular cast iron in contact with wire ropes (29)  V. Oksanen*, P. Andersson, K. Valtonen, K. Holmberg, V.-T. Kuokkala <i>VTT Technical Research Centre of Finland, Finland</i>	Wear and corrosion behaviour of forged and sintered titanium alloy in simulated artificial saliva with different fluoride content (63)  M.-P. Licausi, A.I. Muñoz*, V.A. Borrás <i>Universidad Politécnica de Valencia, Spain</i>	Evaluation of mechanical properties of tribo-films using AFM, micro-scratch and macro-sliding tester (60)  S. Shirato*, R. Tsuboi, K. Miyake, S. Sasaki <i>Graduate school of Tokyo University of Science, Japan</i>
10:00	Frictional heating calculation based on tailored experimental tests (55)  M. Conte*, B. Fernandez <i>Fundacion Tekniker, Spain</i>	Microtribology on soft materials with new instrumentation (85)  P. Kempe*, J. Nohava <i>CSM Instruments, Switzerland</i>	Study on Tribological property of Halogen-free Ionic Liquids for Hard Coatings (80)  Y. Kondo*, T. Koyama, R. Tsuboi, M. Nakano, K. Miyake, S. Sasaki <i>Graduate school of Tokyo University of Science, Japan</i>
10:20	Potential of arc evaporated TiO <sub>2</sub> as an interlayer and its performance in dry sliding (56)  B. Vierneusel, T. Sander*, S. Tremmel, S. Wartzack <i>Friedrich-Alexander-University Erlangen-Nuremberg, Germany</i>	Effect of proteins on film formation in bovine serum lubricated contacts (91)  M. Vrbka*, T. Návrat, I. Krupka, M. Hartl, J. Gallo, T. Adam <i>Brno University of Technology, Czech Republic</i>	Tribo-film formation of lubricant additives on Cr coated surface sliding against NBR rubber (100)  H. Oe*, S. Kato, R. Tsuboi, S. Sasaki <i>Tokyo University of Science, Japan</i>
10:40	Protective tribofilm build up from exhaust residues on the surface on exhaust valve systems in a test rig (58)  P. Forsberg*, S. Jacobson <i>Uppsala University, Sweden</i>	A multiscale tribological study of nacre: Evidence of wear nanomechanisms controlled by the frictional dissipated power (93)  P. Stempflé*, X. Bourrat, R. Kouitat Njiwa O. Pantalé, E. Lopez, J. Takadoum <i>FEMTO-ST, France</i>	
11:00	High temperature wear mechanism map for tool steel and high strength boron steel (67)		Effect of seawater contaminant on the lubrication performance of offshore sliding bearings (191)

	S. Hernandez*, J. Hardell, B. Prakash <i>Luleå University of Technology, Sweden</i>		F. Mubarak*, T. Nyhus, R. Johnsen, N. Espallargas <i>NTNU, Norway</i>
11:20	Break		
	<u>Machine Elements 1</u> Chairman: Å. Kassman	<u>Tribology of Materials 2</u> Chairman: A. Lehtovaara	<u>Abrasion 1</u> Chairman: B. Prakash
11:40	New methodology for monitoring transient phenomena in sliding contact, application to friction brakes (33)  H. Kasem*, J.-F. Witz, Y. Desplanques, P. Dufrénoy <i>Univ. Lille Nord de France, France</i>	The effect of grain size on friction of copper in the transition from elasto-hydrodynamic to boundary lubrication regime (36)  L. Rapoport*, A. Moshkovich, V. Perfilyev, I. Lapsker, L. Meshi <i>Holon Institute of Technology, Israel</i>	High speed slurry-pot type erosion wear tester (35)  N. Ojala*, V.-T. Kuokkala, K. Valtonen, P. Kivikytö-Reponen, P. Vuorinen <i>Tampere University of Technology, Finland</i>
12:00	Direct measurement of friction from piston-bore conjunctions of a high performance engine (48)  M. Gore*, P. King, H. Rahnejat <i>Loughborough University, United Kingdom</i>	The effect of microstructure and lead content on the tribological properties of bearing alloys (40)  V. Ruusila, T. Nyysönen*, K. Valtonen, M. Kallio, P. Vuorinen, A. Lehtovaara, V.-T. Kuokkala <i>Tampere University of Technology, Finland</i>	Impact-abrasion wear testing of wear resistant steels (46)  V. Ratia*, K. Valtonen, A. Kemppainen, V.-T. Kuokkala <i>Tampere University of Technology, Finland</i>
12:20	Experimental study of novel clutch utilizing self-locking property of belt (54)  K. Imado*, H. Nakata, K. Uesaka, A. Miura <i>Oita University, Japan</i>	Effect of static and dynamic ageing on friction and wear behaviour of aluminium 6082 alloy (66)  S. Das, L. Pelcastre*, J. Hardell, B. Prakash <i>Luleå University of Technology, Sweden</i>	Characterization of the effects of embedded quartz layer on wear rates in abrasive wear (82)  V. Heino*, K. Valtonen, P. Kivikytö-Reponen, P. Siitonen, V.-T. Kuokkala <i>TUT, Finland</i>
12:40	Measurement of hydraulic seal friction at high velocities and its numerical prediction (95)  O. Heipl*, H. Murrenhoff <i>RWTH Aachen University, Institute for Fluid Power Drives and Controls (IFAS), Germany</i>	Microstructure effects and braking performances of advanced cast irons for heavy goods vehicle brake disc (72)  M. Collignon*, G. Regheere, A.-L. Cristol, Y. Desplanques, D. Balloy <i>Ecole Centrale de Lille, France</i>	
13:00	Lunch		
	<u>Surface Engineering 1</u> Chairman: H. Ronkainen	<u>Lubrication 2</u> Chairman: T. Yamaguchi	<u>Modelling 1</u> Chairman: D. Wiklund
14:20	Application of Finite Element Method to analysis of tribological properties of aluminum oxide nano-layers	Effects of texture patterns on hydrodynamic and mixed lubrication characteristics (81)	Fretting wear and fretting fatigue influencing the material properties of a high strength CrNi- steel (21)

	(196) D. Jedrzejczyk, W. Skoneczny, M. Kubica* <i>University of Bielsko-Biala, Poland</i>	T. Kato*, N. Imai <i>The University of Tokyo, Japan</i>	T. Christiner*, J. Reiser, I. Gódor, W. Eichlseder, F. Trieb, R. Stuehlinger <i>Montanuniversitaet Leoben, Austria</i>
14:40	The friction and wear behaviours of WC coating on artificial joint materials (17)  Y. Luo*, L. Yang, M. Tian, S. Ge*, Q. Wang <i>CUMT, China</i>	CFD analysis of hydrodynamic lubrication on textured surface considering with cavitation and flow pattern (99)  R. Tsuboi*, A. Nakano, Y. Oshima, S. Sasaki <i>Tokyo University of Science, Japan</i>	Modeling transient piston skirts EHL in initial engine start up using different viscosity-grade oils (24)  S.A. Qasim*, M.S. Ansari, A.Ghafoor, R.A. Mufti, M.A. Malik <i>National University of Sciences and Technology (NUST), Pakistan</i>
15:00	Exploration of techniques for the alleviation of galling during hot forming of Al-Si coated ultra high-strength steels (68)  L. Pelcastre*, J. Hardell, B. Prakash <i>Luleå University of Technology, Sweden</i>	Tribological behaviour of polymeric materials in water lubricated contacts (117)  A. Golchin*, G.F. Simmons, S. Glavatskih, B. Prakash <i>Luleå University of Technology, Sweden</i>	
15:20	Nanotribology of self-assembled monolayers coated on nanostructured materials - Influence of the chain length on the frictional behaviour (94)  A. Domatti*, P. Stempfle, J. Takadoum <i>Institut FEMTO-ST, France</i>	Experimental investigation of the influence of materials on the behaviour of a hydrodynamic tilting-pad thrust bearing (153)  J. Bouyer*, M. Hanahashi, M. Fillon, M. Fujita <i>Pprime Institute. CNRS-Université de Poitiers-ENSMA, France</i>	The effect of contact edge geometry on fretting fatigue behavior in complete contacts (59)  J. Juoksukangas*, A. Lehtovaara, C. Lönnqvist <i>Tampere University of Technology, Finland</i>
15:40	How tribological properties of DLC coatings vary in different engine oils at elevated temperature (104)  F. Gustavsson*, P. Forsberg, A. Hieke, S. Jacobson <i>Uppsala University, Sweden</i>		A numerical way for investigating the impact of surface roughness on mixed lubrication friction (108)  A. Albers, B. Lorentz* <i>KIT – IPEK, Germany</i>
16:00	Break		
16:20	Poster Session		
18:00	Sverresborg Museum		

Thursday 14 <sup>th</sup> June			
08:40	Plenary session 3: Ultrasonic oil film measuring – thinner, smaller, and faster <i>Prof. Rob Dwyer-Joyce</i>		
09:20	Break		
Room	Plenum 1	Plenum 2	Gamle Bybro
	<u>Machine Elements 2</u> Chairman: M. Wasilczuk	<u>Tribology of Materials 3</u> Chairman: K. Subramanian	<u>Surface Engineering 2</u> Chairman: S. Jacobson
09:40	Influence of different gear oils and contact pressure on pit formation mechanisms in the rolling four ball tests ( <a href="#">97</a> )  J. Johansson*, B. Prakash <i>Luleå University of Technology, Sweden</i>	Improvement of tribological properties of thermoplastic resin by using rice bran ceramics particulate as wear-resistant fillers ( <a href="#">90</a> )  K. Shibata*, T. Yamaguchi, K. Hokkirigawa <i>Graduate School of Engineering, Tohoku University, Japan</i>	Friction and Lifetime of Laser Surface Textured Ti6Al4V Samples coated with MoS2 during dry reciprocating sliding ( <a href="#">111</a> )  M.-R. Ripoll*, J. Savková, R. Simic, B. Podgornik <i>AC2T research GmbH, Austria</i>
10:00	An axial sliding test for machine elements surfaces ( <a href="#">98</a> )  A. Godi*, J. Grønbaek, P. Klit, L.d. Chiffre <i>Technical University of Denmark, Denmark</i>	Effect of surface roughening of substrate steel on improvement of delamination strength and tribological behavior of hydrogenated amorphous carbon coating under lubricated conditions ( <a href="#">146</a> )  M. Masuko*, T. Kudo, A. Suzuki <i>Tokyo Institute of Technology, Japan</i>	Technological impact on wear resistant multiphase hardfacings ( <a href="#">113</a> )  E. Badisch*, C. Katsich, A. Zikin <i>AC2T research GmbH, Austria</i>
10:20	Comparison of calculated skirt friction with isolated-driven floating liner force measurements ( <a href="#">136</a> )  B. Littlefair*, H. Rahnejat, S. Theodossiades, S. Howell-Smith <i>Loughborough University, United Kingdom</i>	Frictional behaviour of sealing elastomers in different lubrication regimes ( <a href="#">154</a> )  M. Mofidi*, B. Prakash <i>Sirjan University of Technology, Iran</i>	Evaluating the damage and wear of uncoated and PVD-coated polycrystalline cubic boron nitride by controlled scratch testing ( <a href="#">121</a> )  S. Sveen*, M. Olsson <i>Dalarna University, Sweden</i>
10:40	Assessment of asperity coefficient of friction for various coating materials used in piston ring/liner conjunction using AFM ( <a href="#">162</a> )  G. Styles*, R. Rahmani, H. Rahnejat, B. Fitzsimons <i>Loughborough University, United Kingdom</i>	Biomimetic bearing with water-based lubricant ( <a href="#">159</a> )  Y. Nakanishi*, K. Shimazu, H. Higaki <i>Kumamoto University, Japan</i>	Tribological requirements for selection of new materials for electrical contacts ( <a href="#">126</a> )  Å. Kassman*, U. Wiklund <i>Uppsala University, Sweden</i>
11:00		The rolling contact fatigue of WC/C coated spur gears ( <a href="#">160</a> )	Design of low-friction PVD coating systems with enhanced running-in performance -



		R. Michalczewski*, W. Piekoszewski, M. Szczerek, W. Tuszynski <i>Institute for Sustainable Technologies - National Research Institute, Poland</i>	carbon overcoats on TaC/aC coatings ( <a href="#">128</a> )  H. Nyberg*, T. Tokoroyama, U. Wiklund, S. Jacobson <i>Uppsala University, Sweden</i>
11:20	Break		
	<u>In-Situ Tribology</u> Chairman: S. Armada	<u>Industrial Tribology 2</u> Chairman: K. Tønder	<u>Modelling 2</u> Chairman: S. Dumoulin
11:40	Dynamic study of wear process of TiAlN and CrN multi-layers by in-situ synchrotron X-ray absorption tribotesting ( <a href="#">41</a> )  M. Belin*, J. Schou, I. Rasmussen, J. Strasso, N.J. Mikkelsen, R. Feidenhans'l, J.-M. Martin <i>LTDS – ECL, France</i>	Characterization of abrasive wear in forming tools with polymeric replica profiles ( <a href="#">87</a> )  G. Ramírez*, M. Vilaseca, J. Pujante, D. Casellas <i>Fundació CTM Centre Tecnològic, Spain</i>	A friction model for the boundary and mixed lubricated regimes in sheet metal forming ( <a href="#">122</a> )  D. Wiklund* <i>Swerea IVF, Sweden</i>
12:00	Microscopic study on the relationship between AE signal and wear amount ( <a href="#">74</a> )  A. Hase*, H. Mishina, M. Wada <i>Saitama Institute of Technology, Japan</i>	Modelling the doctor blade – roller tribosystem for improving the cleaning performance during paper production ( <a href="#">107</a> )  M.R. Ripoll*, B. Scheichl, B. Jakab, F. Franek <i>AC2T research GmbH, Austria</i>	Friction contact of coated bodies with a rough slider ( <a href="#">129</a> )  E. Torskaya* <i>A. Ishlinsky Institute for problems in mechanics of RAS, Russian Federation West</i>
12:20	Initiation of metal transfer and galling in forming – differences between aluminium and austenitic stainless steel studied in situ in the SEM ( <a href="#">125</a> )  S. Jacobson*, M. Olsson, J. Heinrichs <i>Uppsala University, Sweden</i>	An investigation of worn work roll materials used in the finishing stands of the hot strip mill for steel rolling ( <a href="#">124</a> )  Maria Nilsson* Mikael Olsson <i>Dalarna University, Sweden</i>	A molecular dynamics study of lubrication characteristics of nanoscale liquid bridge ( <a href="#">137</a> )  T. Tokumasu*, M.-H. Meurisse, Ni. Fillot, P. Vergne <i>Tohoku University, Japan</i>
12:40	A new in-situ interferometry tribometer for evaluating the real contact area of Aluminium surfaces ( <a href="#">180</a> )  S. Armada, L. Johnsen*, T. Nyhus, N. Espallargas <i>NTNU, Norway</i>	Adhesion properties in the secondary shear zone in turning of austenitic stainless steel and carbon steel ( <a href="#">130</a> )  J. Gerth, U. Wiklund* <i>Uppsala University, Sweden</i>	Modeling of a multisupporting crankshaft tribo-system of internal combustion engine ( <a href="#">163</a> )  K. Gavrilov, N. Khozenyuk*, I. Levanov, A. Mylnikov, V. Murzin, V. Romanov <i>South Ural State University, Russian Federation East</i>
13:00	Lunch		
	<u>Abrasion 2</u> Chairman: J. Hardell	<u>Contacts 2</u> Chairman: S. Hogmark	<u>Lubricants</u> Chairman: S. Eskildsen
14:20	Erosion-oxidation of pressure	Rolling friction of single balls	High pressure rheology of



	vessel steel P265GH (86) E. Huttunen-Saarivirta*, V.-T. Kuokkala, M. Antonov, R. Veinthal, J. Tuiremo, K. Mäkelä <i>Department of Materials Science, Tampere University of Technology, Finland</i>	in a flat-ball-flat contact as a function of surface roughness (131) B. Guddei*, S.I.-U. Ahmed <i>Ilmenau University of Technology, Germany</i>	environmentally friendly vegetable oils (22) N. Ohno*, R. Fukuda, H. Mori, Toshifumi Mawatari Sobahan Mia <i>Saga University, Japan</i>
14:40	Nanotribological properties of scandium aluminum nitride alloy thin films (101) E. Broitman*, A. Zukauskaite, G. Wingqvist, J. Birch, L. Hultman <i>Linköping University, Sweden</i>	Normal contact stiffness of elastic solids with fractal rough surfaces (157) V.L. Popov*, R. Pohrt, A.E. Philippov <i>Berlin University of Technology, Germany</i>	
15:00		Clean forming of stainless and titanium products by lubricious oxides (187) I. Heikkilä, B. Wadman*, N. Bay <i>Swerea IVF, Sweden</i>	Low temperature tribology: A study of the influence of base oil characteristics on friction behaviour under low temperature conditions (32) T. Norrby*, P. Nyman, M. Fathi-Najafi, D. Hedlund <i>Statoil Fuel &amp; Retail, Sweden</i>
15:20	Overview of methods and approaches to estimate soil abrasion in TBM tunnelling (158) P. Drevland Jakobsen* <i>NTNU, Norway</i>		Molecular behavior of room-temperature ionic liquids under lubricating condition (62) S. Watanabe*, K. Takiwatari, M. Nakano, K. Miyake, R. Tsuboi, S. Sasaki <i>Graduate School of Tokyo University of Science, Japan</i>
15:40	Effect of soil and rock composition on the wear process of cutter tool steel used in tunnel boring machines (183) S. Equey*, C. Grødal, S. Armada, N. Espallargas <i>SINTEF, Norway</i>		High VI lubricants in start-up conditions (65) G. Simmons*, S. Glavatskih, R. Schweder, Å. Byheden, B. Prakash <i>Luleå University of Technology, Sweden</i>
16:00	Break		
	<u>Ice Tribology</u> Chairman: S. Equey	<u>Tribocorrosion</u> Chairman: N. Espallargas	<u>Biotribology 2</u> Chairman: A. Igual-Muñoz
16:20	Calculated trajectories of curling stones sliding under asymmetrical friction (105) H. Nyberg*, S. Hogmark, S. Jacobson <i>Uppsala University, Sweden</i>	Effect of dwell time and electrode potential on the tribocorrosion of Stellite (169) S. Guadalupe*, S. Mischler, W.-J. Chitty, C. Falcand <i>Ecole Polytechnique Fédérale de Lausanne EPFL, Switzerland</i>	Lubrication properties of hydrophobin proteins in aqueous environment on stainless steel surfaces (109) T.J. Hakala*, F. Wählich, P. Laaksonen, T. Ahlroos, A. Helle, M.B. Linder, R. Bennewitz, K.

			<p>Holmberg <i>VTT, Finland</i></p>
16:40	<p>Development of a laboratory experiment to study of the effect of salt on the compaction of snow (<a href="#">168</a>)</p> <p>J. Wählin*, A. Klein-Paste <i>NTNU, Norway</i></p>	<p>In situ ATR-FTIR spectroscopy for interfacial studies during tribological contact in corrosive media (190)</p> <p>D. Persson* <i>Swerea KIMAB, Sweden</i></p>	<p>Mechanical properties of SixNy- and SixCyNz-coatings for total joint replacements (<a href="#">127</a>)</p> <p>M. Pettersson*, S. Tkachenko, S. Schmidt, S. Jacobson, C. Persson, L. Hultman, H. Engqvist <i>Uppsala University, Sweden</i></p>
17:00	<p>Ice-concrete abrasion study (<a href="#">173</a>)</p> <p>L. Kim*, S. Jacobsen, A. Bekker, K.T. Fosså <i>NTNU, Norway</i></p>	<p>Bulk Metallic Glasses (BMG) for biomedical applications – a tribocorrosion investigation of Zr55Cu30Ni5Al10 in simulated body fluid (45)</p> <p>N. Espallargas, C. Torres, R. Aune, N. Papageorgiou* <i>NTNU, Norway</i></p>	
19:00	<p>Conference dinner at Kristiansten Festning</p>		

Friday 15 <sup>th</sup> June			
08:40	Plenary session 4: Microstructural and chemical changes during sliding interactions: experiments and simulations <i>Assistant Prof. Karthikeyan Subramanian</i>		
09:20	Break		
Room	Plenum 1	Plenum 2	Gamle Bybro
	<u>Lubrication 3</u> Chairman: K. Tønder	<u>Wear 2</u> Chairman: B. Prakash	<u>Friction</u> Chairman: I. Sivebæk
09:40	Effects of non-Newtonian rheology and interfacial slippage on Stribeck curve ( <a href="#">138</a> )  P.L. Wong*, Z. Fu, F. Guo <i>City University of Hong Kong, China</i>	Investigations into wear and galling mechanism of aluminium alloy-tool steel tribopair at different temperatures ( <a href="#">71</a> )  J. Pujante*, L. Pelcastre, M. Vilaseca, D. Casellas, B. Prakash <i>Fundació CTM Centre Tecnològic, Spain</i>	Coefficient of friction measurements for thermoplastics and fiber composites under low sliding velocity and high pressure ( <a href="#">38</a> )  K. Poullos*, G. Svendsen, J. Hiller, P. Klit <i>DTU, Denmark</i>
10:00	Visco-elastohydrodynamic contact of rough surfaces ( <a href="#">143</a> )  I. Goryacheva*, P. Usov <i>Institute for Problems in Mechanics of RAS, Russian Federation West</i>	Wear equation for adhesive wear established through elementary process of wear ( <a href="#">78</a> )  H. Mishina*, A. Hase <i>Chiba University, Japan</i>	Identification of relevant parameters of the friction surface involved in the appearance of squeal noise ( <a href="#">42</a> )  M. Duboc*, F. Massi, J.-F. Brunel, V. Magnier, P. Dufrenoy, Y. Berthier <i>Laboratoire de mécanique de Lille, France</i>
10:20	Identification of stiffness and damping coefficients of hydrostatic bearing with angled injection ( <a href="#">155</a> )  P. Jolly*, A. Hassini, M. Arghir, O. Bonneau <i>Institut Pprime, France</i>		Development of high grip footwear outsole using hybrid rubber surface pattern ( <a href="#">61</a> )  T. Yamaguchi*, K. Kasuga, T. Ito, S. Ishizawa, K. Hokkirigawa <i>Tohoku university, Japan</i>
10:40	Synergy between secondary phases in aluminium based bearing material and lubricant additives ( <a href="#">193</a> )  K.S. Pondicherry*, F. Grün, F. Summer, I. Gódor, E. Lainé, M. Offenbecher <i>Materials Center Leoben, Austria</i>	Testing functional surfaces of heavy duty valve train components under realistic operating conditions ( <a href="#">184</a> )  F. Cabanettes*, J. Alessi, T. Bonomi, N. Faure, J. Mohlin, B.-G. Rosén <i>Halmstad University, Sweden</i>	Static-to-sliding friction measurements ( <a href="#">84</a> )  P. Andersson*, H. Ronkainen, T. Hakala, R. Waudby, S. Varjus <i>VTT Technical Research Centre of Finland, Finland</i>
11:00		Polymer wear evaluation ( <a href="#">201</a> )  M. Lagerbon, I.M. Sivebæk* <i>Tech Univ Den, Denmark</i>	An efficient sequential approach for simulation of thermal stresses in disc brakes ( <a href="#">142</a> )  A. Rashid*, N. Strömberg

			<i>Jönköping University, Sweden</i>
11:20	Break		
	<u>Machine Elements 3</u> Chairman: S. Andersson	<u>Modelling 3</u> Chairman: S. Dumoulin	<u>Surface Engineering 3</u> Chairman: K. Holmberg
11:40	<p>The investigations of the dynamics of a flexible rotor on multilayer plain bearings, taking into account the rheological properties of the lubricant (<a href="#">170</a>)</p> <p>E. Zadorozhnaya* <i>South Ural State University, Russian Federation East</i></p>	<p>Application of the Fluid - Structure Interaction technique (FSI) for the analysis of hydrodynamic lubrication problems (<a href="#">174</a>)</p> <p>M. Wodtke, A. Olszewski, M. Wasilczuk* <i>GUT, Poland</i></p>	<p>On the residual stresses vs. hardness of tribological surfaces (<a href="#">133</a>)</p> <p>S. Hogmark*, M. Smid, E. Coronel, B. André, U. Wiklund <i>Uppsala University, Sweden</i></p>
12:00	<p>A sensitivity study of the tribotesting setup to rate different liner surfaces (<a href="#">176</a>)</p> <p>Z. Dimkovski*, Y. Charon, M. Perrier, F. Cabanettes, B.-G. Rosén <i>Halmstad University, Sweden</i></p>	<p>Numerical and experimental investigation of non-conformal lubricated contacts (<a href="#">185</a>)</p> <p>H. Krampfl, F. Grün*, I. Gódor <i>Montanuniversität Leoben, Austria</i></p>	<p>The effect of coating characteristics on the coating performance of a-C:H and ta-C films (<a href="#">156</a>)</p> <p>H. Ronkainen*, K. Holmberg, A. Laukkanen, T. Andersson, M. Kano, T. Horiuchi, T. Wakabayashi, T. Suzuki, M. Kumagai, M Taki <i>VTT Technical Research Centre of Finland, Finland</i></p>
12:20	Closure		
13:00	Lunch		