

Tribological and electrical study of Fluorinated Diazonium Films as dry lubricants for electrical contacts

Submitted by Emmanuel Lemoine on Tue, 02/04/2014 - 16:12

Titre	Tribological and electrical study of Fluorinated Diazonium Films as dry lubricants for electrical contacts
Type de publication	Article de revue
Auteur	Alamarguy, David [1], Benedetto, Alessandro [2], Balog, Mirela [3], No�l, Sophie [4], Viel, Pascal [5], Le Derf, Franck [6], Houz�, Fr�d�ric [7], Sall�, Marc [8], Palacin, Serge [9]
Type	Article scientifique dans une revue � comit� de lecture
Ann�e	2008
Langue	Anglais
Date	2008
Num�ro	3-4
Pagination	802 - 805
Volume	40
Titre de la revue	Surface and Interface Analysis
ISSN	0142-2421
Mots-cl�s	conducting probe atomic force microscopy [10], deflection and resistance curves (force and current vs distance curves) [11], diazonium salts thin film modified gold electrode [12], electrical properties [13], nanocontact [14]
R�sum� en anglais	<p>The need to operate in extreme environmental conditions (ultra high vacuum, high temperatures, aerospace, etc.) and the miniaturisation toward microelectromechanical system is demanding new materials in the field of low-level electrical contacts lubrication. A dry and chemically immobilised layer avoiding the traditional wet lubricating fluids would have many advantages. We report here the first results on films obtained by the electrochemical reduction of different diazonium salts and their use as protective coatings able to lubricate the metallic surfaces of an electrical contact while preserving at the same time electrical conduction. The physicochemical properties of the films, elaborated from various diazonium salts, were studied by cyclic voltammetry and ATR FT-IR spectroscopy. Atomic force microscope was combined with a home-made wide-range current measurement system to investigate simultaneously the mechanical and electrical interactions between the doped diamond conductive tips and the evaporated gold surfaces coated with the diazonium films. The analysis of the simultaneous mechanical and electrical properties of the films in a nanocontact situation is shown to bring much insight into the electrical contact application.</p>
URL de la notice	http://okina.univ-angers.fr/publications/ua1913 [15]
Lien vers le document	http://onlinelibrary.wiley.com/doi/10.1002/sia.2775/abstract [16]

Liens

- [1] [http://okina.univ-angers.fr/publications?f\[author\]=2499](http://okina.univ-angers.fr/publications?f[author]=2499)
- [2] [http://okina.univ-angers.fr/publications?f\[author\]=2500](http://okina.univ-angers.fr/publications?f[author]=2500)
- [3] [http://okina.univ-angers.fr/publications?f\[author\]=2501](http://okina.univ-angers.fr/publications?f[author]=2501)
- [4] [http://okina.univ-angers.fr/publications?f\[author\]=2502](http://okina.univ-angers.fr/publications?f[author]=2502)
- [5] [http://okina.univ-angers.fr/publications?f\[author\]=2503](http://okina.univ-angers.fr/publications?f[author]=2503)
- [6] [http://okina.univ-angers.fr/publications?f\[author\]=24689](http://okina.univ-angers.fr/publications?f[author]=24689)
- [7] [http://okina.univ-angers.fr/publications?f\[author\]=2505](http://okina.univ-angers.fr/publications?f[author]=2505)
- [8] <http://okina.univ-angers.fr/marc.salle/publications>
- [9] [http://okina.univ-angers.fr/publications?f\[author\]=2506](http://okina.univ-angers.fr/publications?f[author]=2506)
- [10] [http://okina.univ-angers.fr/publications?f\[keyword\]=4773](http://okina.univ-angers.fr/publications?f[keyword]=4773)
- [11] [http://okina.univ-angers.fr/publications?f\[keyword\]=4774](http://okina.univ-angers.fr/publications?f[keyword]=4774)
- [12] [http://okina.univ-angers.fr/publications?f\[keyword\]=4775](http://okina.univ-angers.fr/publications?f[keyword]=4775)
- [13] [http://okina.univ-angers.fr/publications?f\[keyword\]=4776](http://okina.univ-angers.fr/publications?f[keyword]=4776)
- [14] [http://okina.univ-angers.fr/publications?f\[keyword\]=4777](http://okina.univ-angers.fr/publications?f[keyword]=4777)
- [15] <http://okina.univ-angers.fr/publications/ua1913>
- [16] <http://onlinelibrary.wiley.com/doi/10.1002/sia.2775/abstract>

Publié sur *Okina* (<http://okina.univ-angers.fr>)