



Associate Professor Natasha Sacks

Position: Associate Professor
Qualifications: Dr.Ing. Engineering (Erlangen, Germany)
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Research Interests

Powder metallurgy research focusing predominantly on cemented tungsten carbide alloys and coatings, from the production processes to failure and recycling of components. Current research themes are: cutting tools, cold spray coatings, recycling of scrap hardmetal, and tribology of alloys and coatings.

Recent Publications

1. C Freemantle, N Sacks, M Topic, CA Pineda-Vargas, *PIXE characterization of by-products resulting from the zinc recycling of industrial cemented carbides*, Nuclear Instruments and Methods in Physics Research B 363 (2015) 167-172.
2. C Freemantle, N Sacks, *The impact of zinc recycling on the slurry rheology of WC-6wt.%Co cemented carbides*, International Journal of Refractory Metals and Hard Materials, 49 (2015) 99-109.
3. CS Freemantle, N Sacks, *Recycling of cemented tungsten carbide mining tool scrap*, The Journal of The Southern African Institute of Mining and Metallurgy, 115 (2015) 1207-1213.
4. D Lioma, N Sacks, I Botef, *Cold gas dynamic spraying of WC-Ni cemented carbide coatings*, International Journal of Refractory Metals and Hard Materials, 49 (2015) 365-373.
5. NBS Magagula, N Sacks, I Botef, *Characterisation of WC-4wt%Ni-1wt%Mo and WC- 4wt%Ni-10wt%TiC cold spray coatings*, Microscopy Society of Southern Africa 53rd Annual Conference Proceedings, vol. 45, South Africa, December 2015. ISBN: 978-0-620-68731-7.
6. RI Sekabate, N Sacks, I Botef, *Sliding wear of WC-4wt%Ni-10wt%TiC-1wt%Mo cold sprayed coatings*, Microscopy Society of Southern Africa 53rd Annual Conference Proceedings, vol. 45, South Africa, December 2015. ISBN: 978-0-620-68731-7.
7. T Moropene, N Sacks, D Lioma, I Botef, *Low Pressure Cold Gas Dynamic Spraying of a WC-10wt%(Ni-Al-Al₂O₃-Zn) Coating*, Euro PM2015 Congress and Exhibition, France, October 2015. ISBN: 978-1-899072-47-7.



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8. JT Kurasha, N Sacks, *Feasibility Study on the Use of Zinc Recycling to Recover Tool Grade Cemented Tungsten Carbide Powders*, Euro PM2015 Congress and Exhibition, France, October 2015. ISBN: 978-1-899072-47-7.
 9. D Lioma, N Sacks, I Botef, *Cold gas dynamic spraying of wear resistant WC-based coatings*, 11th Int Tribology Conference, March 2015, South Africa. ISBN 978-0-620-60542-7.
 10. AA Enever, GA Oosthuizen, N Sacks, *Wear effects of custom tungsten carbide grinding wheel*, 11th Int Tribology Conference, March 2015, South Africa. ISBN 978-0-620-60542-7.
 11. F Conradie, Tiaan Oosthuizen, N Sacks, M Saxer, *The effect of titanium alpha case on the wear of indexable carbide cutters*, 11th Int Tribology Conference, March 2015, South Africa. ISBN 978-0-620-60542-7.

Affiliations

South African Institute of Mining and Metallurgy
South African Institute of Tribology
Metal Powder Industries Federation (USA)

Teaching

Solidification, heat treatment and microstructure (3rd year)
Corrosion and Wear (3rd year)
Tribology: friction, wear and lubrication (Postgraduate) Weldability
of ferrous & non-ferrous materials (Postgraduate)