

Curriculum vitae

Yu Cao

Assistant professor

Material- och tillverkningssteknik, Chalmers Tekniska Högskola

Telephone: 031-7721252 (office)

E-mail: yu.cao@chalmers.se

Education:

- 08/02-04/2007 Ph.D., Materials and Manufacturing Technology, Chalmers University of Technology, Sweden.
- 08/02-06/2004 Licentiate, Materials and Manufacturing Technology, Chalmers University of Technology, Sweden.
- 09/89-03/1992 M.Sc., Materials Science & Engineering, Central South University of Technology, China.
- 09/85-07/1989 B.Sc., Materials Science & Engineering, Central South University of Technology, China.

Career Outline:

- 04/2011-present *Assistant professor*, Department of Materials and Manufacturing Technology, Chalmers University of Technology.
- 06/2007-03/2011 *Post-doc*, Department of Materials and Manufacturing Technology, Chalmers University of Technology
- 07/1998-07/2002 *Researcher and Lecturer*, Department of Materials Science & Engineering, Central South University, China.
- 04/1992-07/1998 *Lecturer and Researcher*. Department of Mechanical & Electrical Engineering, Changsha Technical College, China.

Teaching experience and supervision

Co-lecturer: Metal engineering; Mechanical performance of engineering materials

Supervision for undergraduate, master and Ph.D students to complete thesis

Examiner for courses: Physical Metallurgy; Mechanical Properties of Metals (undergraduate program, China)

Teaching assistant for courses “Materials Technique”, “Metallic Materials” and “Materials Characterization and Failure Analysis”.

Research grants

- Funding from Graduate School of Material Science; Styrke Område Material Project “Surface Engineering on Austenitic Stainless Steel by Nitrogen Stabilized Expanded Austenite”.
- “Prytziska fonden nr 2” from Jernkontoret

Publication list of the applicant

Scientific journal articles:

1. High temperature corrosion of Ni-based alloys SCA 425+ and IN792. H. Lai, Y. Cao, P. Viklund, F. Karlsson, L-G, Johansson and K. Stiller. *Oxidation of Metals*, 2013, DOI 10.1007/s11085-013-9393-z.
2. Role of Nitrogen Uptake in Oxidation of 304L and 904L Austenitic Stainless Steel. Y. Cao and M. Norell 'Oxidation of Metals', DOI 10.1007/s11085-013-9391-1, 2013
3. Intergranular crack tip oxidation in a Ni-base superalloy. L. Viskari, Magnus Hörnqvist, K. Moore, Y. Cao, K. Stiller. *Acta Materialia*, 2013, [http:// dx.doi.org/10.1016/j.actamat.2013.02.050](http://dx.doi.org/10.1016/j.actamat.2013.02.050).
4. Thin film characterisation of chromium disilicide. P.L. Tam, Y. Cao, L. Nyborg. *Surface Science* 609 152–156, 2013.
5. In homogeneous Microstructure and Electrical Transport Properties at the LaAlO₃/SrTiO₃ Interface. Kalabukhov, T. Claeson, P. Paolo Aurino, R. Gunnarsson, D. Winkler, E. Olsson, N. Tuzla, J. Börjesson, Y. Cao, L. Nyborg, Y.A. Boikov, I.T. Serenkov, V. I. Sakharov, and M.P. Volkov. *Japanese Journal of Applied Physics*, 2012, 51, 11PG10
6. XRD and XPS Characterisation of Transition Metal Silicide Thin Films. P.L. Tam, Y. Cao, L. Nyborg. *Surface Science*, 2012, 606, 329-336
7. Mechanical Behaviour of a Rephosphorized Steel for Car Body Applications — Effects of Temperature, Strain Rate and Pre-treatment. Y. Cao, J. Ahlström and B. Karlsson. *Journal of Engineering Materials and Technology*, 2011, 133, 021019-1.
8. Corrosion Properties of Thermally Annealed and Co-sputtered Nickel Silicide Thin Films. Pui Lam Tam; Yu Cao; Urban Jelvestam; Lars Nyborg: *Surface and Coatings Technology*, 2011, 206 (6) pp. 1160-1167.
9. Grain boundary microstructure and fatigue crack growth in Allvac 718Plus superalloy. L. Viskari, Y. Cao, M. Norell, G. Sjöberg and K. Stiller. *Materials Science and Engineering* 2011, A 528, 2570-2580.
10. XPS Calibration Study of Thin Film Nickel Silicides. Y. Cao, L. Nyborg and U. Jelvestam. *Surface and Interface Analysis*, 2009, 41, 471–483.
11. Initial formation of contact layers on Ni/SiC samples studied by XPS. S. A. Pérez-García, Y. Cao and L. Nyborg. *Surface and Interface Analysis*, 2008, 40, 1144–1148.
12. Interface Reactions and Electrical Properties of Ta/4H-SiC Contacts. Y. Cao, S. A. Pérez-García and L. Nyborg. *Materials Science Forum*, 2007, 556-557, 713-717.
13. Investigation of Ni/Ta Contacts on 4H-SiC upon Thermal Annealing. Y. Cao, S. A. Pérez-García and L. Nyborg. *Applied Surface Science*, 2007, 254, 139–142.
14. Low temperature oxidation of Cr-alloyed MoSi₂. E. Ström, Y. Cao and Y.M. Yao. *Transactions of Non-ferrous Metals Society of China*, 2007, 1282-1286.
15. Quantitative XPS Depth Profiling for Nickel Silicide/4H-SiC Contact with Layered Structure. Y. Cao and L. Nyborg. *Surface and Interface Analysis*, 2006, 38, 748-751.
16. The Study of Reaction Process on Ni/4H-SiC Contact. Y. Cao, L. Nyborg, D. Yi and U. Jelvestam. *Materials Science and Technology*. 2006, 22, 1227-1234.
17. Effect of Pre-treatment and Nickel Layer Thickness on Nickel Silicide/Silicon Carbide Contact. Y. Cao, L. Nyborg, U. Jelvestam and D. Yi. *Applied Surface Science*, 2005, 241, 392-402.
18. The Influence of Er on Microstructure and Properties of Mo₅Si₃-Based Alloy. Cao Yu, Yi Danqing, etc. *Rare Metal Materials and Engineering* 2004, 11, 1170-1173.
19. Mechanical Alloying Study of Mo-Si-Co Powder Mixture. Cao Yu, Yi Danqing, Yin Lei, Liu Huang. *Rare Metal Materials and Engineering*, 2003, 11, 946-949.
20. Corrosion of molybdenum in aqueous solutions. Yi Danqing, Cao Yu, etc. *Corrosion Science and Technology Protection* 2003, 15, 151-153.
21. Mechanical alloying of Mo-Si-Fe powders. Cao Yu, Yi Danqing, etc. *Transactions of Nonferrous Metals Society of China*, 2002, 04, 681-685.
22. Physical metallurgy of M₅Si₃-type silicides. Yi Danqing, Du Ruoxin and Cao Yu. *Acta Metallurgica Sinica*, 2001, 11, 1-10
23. Ternary alloying of Mo₅Si₃ with Zr, Ti, Co and V. Cao Yu, Yi Danqing, Lu Bin, Du Ruoxin, Shu Jinbo. *Transactions of Nonferrous Metals Society of China*, 2001, 11, 691-695.
24. The study of fatigue properties of cold-rolled Cu-base elastic alloys. Cao Yu, Yi Danqing, etc. *Natural Science Journal of XiangTang University*, 2001, 3, 79-83.
25. Effect of trace element on properties of Cu-Ni-Zn-Mn elastic alloy. Cao Yu, Liu Jinwen. *Metallic Functional Materials*, 1999, 3, 117-121.
26. Thermo-mechanical study of Cu-Ni-Zn-Mn spring alloy. Cao Yu, Liu Jinwen. *Hunan Nonferrous Metals*, 1999, 1, 42-45.

27. Fatigue and Fracture characteristics of Cu-Ni-Zn-Mn spring alloys. Cao Yu, Liu Jinwen. Hunan Nonferrous Metals, 1999, 5, 29-32.
28. Superplastic behavior of microduplex Cu-Ni-Zn-Mn spring alloy. Cao Yu, Liu Jinwen. Hunan Nonferrous Metals, 1999, 3, 31-33.

Book Chapter

"Contact Formation on Silicon Carbide by Use of Nickel and Tantalum in a Materials Science Point of View" in "Properties and Applications of Silicon Carbide", ISBN 978-953-307-201-2. Pp 171-194. Y. Cao and L. Nyborg.

International conferences

1. D. Yi, Y. Cao & Lars Nyborg. "Preparation of Mo₅-xCo_xSi₃ Materials by Mechanical Milling and Hot Pressing", 2002 World Congress on Powder Metallurgy & Particulate Materials, June 16-21, Orlando, Florida.
2. Y. Cao and L. Nyborg. "Quantitative XPS Depth Profiling for Nickel Silicide/4H-SiC Contact with Layered Structure", 11th European Conference on Applications of Surface and Interface Analysis ECASIA '05, Vienna, September 25-30, 2005.
3. Y. Cao, S. A. Pérez-García and L. Nyborg. "Interface Reactions and Electrical Properties of Ta/4H-SiC Contacts European Conference on Silicon Carbide and related Materials", Newcastle Upon Tyne, United Kingdom, September, 2006.
4. Y. Cao, S. A. Pérez-García and L. Nyborg. Investigation of Ni/Ta Contacts on 4H-SiC upon Thermal Annealing. The 13th International Conference on Solid Films and Surfaces ICSFS 13, San Carlos de Bariloche, Argentina, 6–10 November 2006.
5. L. Nyborg, Y. Cao, U. Jelvestam. "Controllable formation of Ni silicides at the surface" International Conference of Nonferrous Materials (ICNFM), Changsha, China, 25-30 November 2007.
6. Y. Cao and M. Norell. "Role of Nitrogen Uptake in Oxidation of 304L and 904L Austenitic Stainless Steels", The 8th International Symposium on High-Temperature Corrosion and Protection of Materials, Les Embiez, France, 20-25 May, 2012.
7. Y. Cao, G. Maistro, M. Norell, S.A. Pérez-Garcia and L. Nyborg "Multi-technique Characterization of Low Temperature Plasma Nitrided Austenitic AISI 304L and AISI 904L Stainless Steel", 15th European Conference on Applications of Surface and Interface Analysis 2013, Sardinia, Italy, 13-18 Oct., 2013.

Engineering report:

1. New Corrosion Resistant Materials for Steam Superheaters in Biomass and Waste Fired Boilers – Focus and Field Test Study (KME412). Lars Nyborg, Yu Cao, Kristina Hellström and Jan-Erik Svensson
2. Materials Behavior in Automotive Crash Situations – Influence of Mechanical and Thermal Pretreatment", funded by Vinnova. Yu Cao Johan Ahlström and Birger Karsson.