



Exponent[®]
Engineering & Scientific Consulting

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Professional Profile

Dr. Tatar is a chemical engineer who specializes in failure analysis, corrosion, material selection, vapor species contamination, thin film oxidation, and high temperature oxidation. He has expertise with scanning electron microscopy (SEM), optical microscopy (OM), x-ray photoelectron spectroscopy (XPS), energy dispersive x-ray spectroscopy (EDS), and x-ray diffraction (XRD). He also has experience and knowledge of atmospheric corrosion, localized corrosion, dissimilar metal corrosion, solder joint reliability issues, and the determination of surface area in powders using BET gas adsorption testing.

Dr. Tatar has investigated failures in pipes, heat exchangers, consumer appliances, consumer electronics, semiconductor process equipment, and electrical connectors. The materials of construction in these investigations included ductile iron, copper, tinned copper, brasses, stainless steels, and galvanized steels. He has also performed metal leaching tests on wearable devices, comparative design analysis of consumer appliances, and qualification testing of consumer products.

Before his time at Exponent, Dr. Tatar acted as a teaching assistant and laboratory manager in the High Temperature Materials Laboratory at Montana State University. In this role he performed testing services for industrial partners in the automotive and silicon refining industries as well as fundamental research related to solid oxide fuel cell cathode poisoning. Dr. Tatar's research consisted of an investigation into the generation and reactive condensation of chromium vapor species from chromium sources using surface sensitive materials characterization techniques. He developed a mechanism to explain the process by which chromium vapor species deposit and speciate on ceramic surfaces.

Dr. Tatar also examined the high temperature (> 500 °C) corrosion of ferritic stainless steels and other alloys under a variety of gas atmospheres and contacting conditions. These gas atmospheres included mixtures of oxygen, nitrogen, and water vapor, with separate exposures consisting of chlorosilanes and hydrogen chloride.

Academic Credentials & Professional Honors

Ph.D., Engineering, Montana State University, 2018

B.S., Engineering, Montana State University, 2015

B.S., Biological Engineering, Montana State University, 2015

Licenses and Certifications

Licensed Professional Chemical Engineer, California, #7006

Prior Experience

Laboratory Manager and Teaching Assistant, High Temperature Materials Laboratory, Montana State University, Department of Chemical and Biological Engineering, 2015-2018

Professional Affiliations

American Institute of Chemical Engineers

Publications

Tatar, G., Gannon, P., Swain, N., Remington, E., and Dansereau, S. (2019) "Investigation of Surface Interactions between Volatile Chromium Species and Ceramics." *Surface and Interface Analysis*. 51(5): 506-515.

Tatar, G., Gannon, P., Swain, N., Remington, E., and Dansereau, S. (2018) "XPS characterization of aluminosilicate fibers post interaction with chromium oxyhydroxide at 100-230°C." *Journal of the Electrochemical Society*. 165(10): C624-C632.

Tatar, G., Gannon, P., Swain, N., Remington, E., and Dansereau, S. (2018) "Surface studies of T409 stainless steel at 700°C in wet or dry air or N₂ with and without contacting ceramic fibers." *Oxidation of Metals*. 90(1-2): 217-235.

Aller J., Swain N., Baber M., Tatar, G., Jacobson N., and Gannon, P. (2017) "Influence of Silicon on High Temperature (600°C) Chlorosilane Interactions with Iron." *Solar Energy Materials and Solar Cells*. 160: 410-417.

Aller J., Mason R., Walls K., Tatar G., Jacobson N., and Gannon, P. (2016) "High-Temperature (550-700°C) Chlorosilane Interactions with Iron." *Journal of the Electrochemical Society*. 163(10): C666-C674.

Presentations

Tatar G. Investigation of Surface Interactions between Volatile Chromium Species and Ceramics. 233rd ECS Meeting. Seattle, WA, 2018.

Tatar G. The Interaction of Volatile Chromium Species and Ceramic Fibers at High Temperature. Poster presentation, Gordon Research Conference: High Temperature Corrosion. New London, NH, 2017.

Tatar G. The Interaction of Volatile Chromium Species and Ceramic Fibers at High Temperature. Poster presentation, The Sixth International School for Materials for Energy and Sustainability. Pasadena, CA, 2017.