

# Gas Transport through Smut Formed During AC Electrograining by Synchronized SAXS and electrochemical experiments.

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Small angle X-ray scattering has been used to characterize the particles and surrounding phases inside a surface gel that inherently forms during the AC electrograining process. By synchronizing the electrochemistry with the SAXS data, we were able to obtain the potential response during electrograining and the rate of gas release (from the gel) after electrograining. Analysis of these results shows that gas transport, through this gel, and dried smut morphology both change when different additives are used. Two general gas transport mechanisms are proposed, which explain differences in the experimental results. Finally, differences in gas transport and final surface morphology indicate that gas transport through the surface gel may be an important factor in the AC electrograining process.

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