

----- **GENERAL INFORMATION** -----

DATA TITLE: Photos and optical microscope images of ferritic Fe-Cr-Al-Mo alloy Kanthal APMT and Cr-Mo-V steel T91 (UNS: K90901) after oxidation at 1200 C for 2 h

PROJECT TITLE: Materials Characterization of High-Temperature Oxidation on ferritic Fe-Cr-Al-Mo alloy Kanthal APMT and Cr-Mo-V steel T91 (UNS: K90901)

DATA ABSTRACT: Images of ferritic Fe-Cr-Al-Mo alloy Kanthal APMT and Cr-Mo-V steel T91 (UNS: K90901) before and after oxidation at 1200 degrees Celsius for 2 h in air or steam were digitally photographed. Higher magnification images detailing the surface morphology were taken using optical microscopy.

AUTHORS:

Author: Trishelle M. Copeland-Johnson

ORCID: 0000-0002-0107-2212

Institution: Iowa State University

Email: tcopelan@iastate.edu

Author: Charles K. A. Nyamekye

ORCID: N/A

Institution: Iowa State University, The Ames Laboratory

Email: nyamekye@iastate.edu

Author: Simerjeet Gill

ORCID: N/A

Institution: Brookhaven National Laboratory

Email: gills@bnl.gov

Author: Lynne Ecker

ORCID: N/A

Institution: Brookhaven National Laboratory

Email: lecker@bnl.gov

Author: Nicola Bowler

ORCID: N/A

Institution: Iowa State University

Email: nbowler@iastate.edu

Author: Emily A. Smith

ORCID: N/A

Institution: Iowa State University, The Ames Laboratory

Email: esmith1@iastate.edu

Author: Raul B. Rebak

ORCID: N/A

Institution: General Electric Research

Email: rebak@ge.com

Corresponding author: Simerjeet Gill (gills@bnl.gov)

**ASSOCIATED PUBLICATIONS:**

T. Copeland-Johnson, C.K.A. Nyamekye, S.K. Gill, L. Ecker, N. Bowler, E.A. Smith, R.B. Rebak, Characterization of Kanthal APMT and T91 oxidation at beyond design-basis accident temperatures, Corros. Sci. (2020).

**COLLECTION INFORMATION:**

Time period(s): 2017-2019

Location(s): Iowa State University, Brookhaven National Laboratory

**----- FILE DIRECTORY -----**

File Name	Description
Optical_APMT_Air.png	Optical micrograph image of Kanthal APMT oxidized in air
Photo_APMT_Air.jpg	Photograph of Kanthal APMT after oxidation in air
Optical_APMT_Control.png	Optical micrograph image of Kanthal APMT before oxidation
Photo_APMT_Control.jpg	Photograph of Kanthal APMT before oxidation
Optical_APMT_Steam.png	Optical micrograph image of Kanthal APMT oxidized in steam
Photo_APMT_Steam.jpg	Photograph of Kanthal APMT after oxidation in steam
Optical_T91_Air.png	Optical micrograph image of T91 oxidized in air
Photo_T91_Air.jpg	Photograph of T91 after oxidation in air
Optical_T91_Control.png	Optical micrograph image of T91 before oxidation
Photo_T91_Control.jpg	Photograph of T91 before oxidation
Optical_T91_Steam.png	Optical micrograph image of T91 oxidized in steam
Photo_T91_Steam.jpg	Photograph of T91 after oxidation in steam

----- SOFTWARE -----

Name: ImageJ

Version: 1.51k

System Requirements: ImageJ will run on any system that has a Java 8 (or later) runtime installed. This includes, but is not limited to:

Windows XP, Vista, 7 or 8 with Java installed from java.com

Mac OS X 10.8 "Mountain Lion" or later with Java installed from java.com

Ubuntu Linux 12.04 LTS or later with OpenJDK 8 installed

URL: <http://imagej.nih.gov>

Developer: George H. Silva

Additional Notes: N/A

----- EQUIPMENT -----

Manufacturer: Nikon

Model: Mm-40

Embedded Software/Firmware Name: (if applicable) N/A

Embedded Software/Firmware Version: (if applicable) N/A

Additional Notes: Equipped with Digital Sight DS-2Mv camera

Manufacturer: Canon

Model: PowerShot A2300

Embedded Software/Firmware Name: (if applicable) N/A

Embedded Software/Firmware Version: (if applicable) N/A

Additional Notes: N/A

----- LICENSING -----

This data is protected under Attribution 4.0 International (CC BY 4.0) with the following permissions:

- **Share** — copy and redistribute the material in any medium or format
- **Adapt** — remix, transform, and build upon the material for any purpose, even commercially.
- **Attribution** — You must give appropriate credit, provide a link to the license, and indicate if changes were made. You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use.
- **No additional restrictions** — You may not apply legal terms or technological measures that legally restrict others from doing anything the license permits.

