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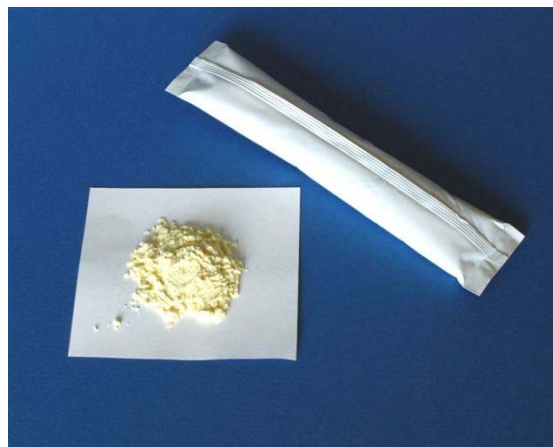
**IMPORTANT
MESSAGE
WHEN ACCESSING
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<http://www.nist.gov/srm>
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The identification of any commercial product or trade name does not imply endorsement or recommendation by the National Institute of Standards and Technology.

New NIST SRMs

NIST SRM 1849 Infant/Adult Nutritional Formula

Standard Reference Material (SRM) 1849 Infant/Adult Nutritional Formula has been added to the list of food-matrix SRMs available from the National Institute of Standards and Technology (NIST). SRM 1849 is a replacement for SRM 1846 Infant Formula. SRM 1846 was produced in 1996 and was no longer representative of commercial infant formula. However, because of its manganese concentration, for example, SRM 1849 would not meet the requirements of the Infant Formula Act of 1980 and, therefore, is not an infant formula. Modern infant formula often contains added nutrients that have been shown to play a role in infant development. In addition, NIST's analytical capabilities have evolved since SRM 1846 was issued, allowing more certified values to be assigned in SRM 1849. Five certified, 38 reference, and 9 information values – 52 values in total – were provided in SRM 1846 at the end of its lifetime. By contrast, SRM 1849 is provided with 43 certified and 43 reference values – a total of 86 values. Reference values are assigned for amino acids and nucleotides, which may play a role in cognitive development. This and other food-matrix SRMs are intended for use as primary control materials when assigning values to in-house (secondary) control materials and for validation of analytical methods.

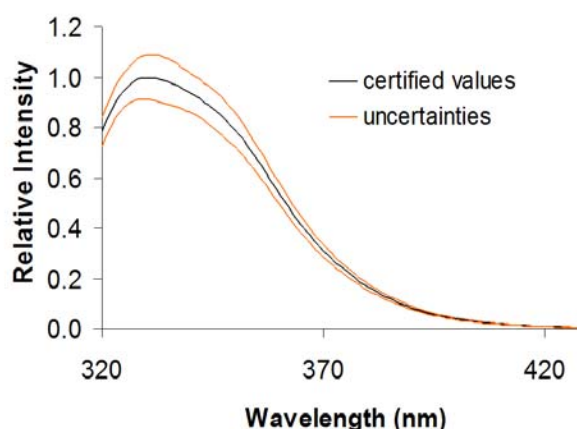


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NIST SRM 2942 for Ultraviolet Spectral Correction and Performance Verification of Fluorescence Instruments

A ready-to-use, fluorescent glass SRM has recently been released by NIST. It enables the relative spectral correction and day-to-day performance verification of fluorescence instruments to be achieved in the ultraviolet (UV) spectral region with relative ease, even by non-expert users. Luminescence measurements have become the detection methods of choice for many clinical and biochemical assays, due to their extraordinary sensitivity and selectivity. These analytical methods are becoming increasingly more quantitative, requiring standards to calibrate the luminescence measuring instruments that they utilize and aid in method validation as required by quality and regulatory systems. Ideally, users would like to employ the same organic dye probes used for analyte detection as standards for fluorescence intensity and spectral correction. Unfortunately, organic dyes photodegrade quickly, do not have long shelf lives in solution, have environment dependent fluorescence, and are expensive to produce at high purity.

After studying the characteristics of the different types of fluorescent materials, NIST researchers found metal-ion-doped glasses to be the best choice for use as fluorescence standards for spectral correction and intensity. These glasses are photostable, robust, relatively inexpensive, and can be made to suit most detection formats. SRM 2942 has UV emission that peaks at 330 nm and an effective emission range from 320 nm to 400 nm. The certified, steady-state emission spectrum is supplied with each SRM, along with estimated total uncertainties. The SRM



is highly resistant to photodegradation and is, therefore, also recommended for use as a day-to-day and instrument-to-instrument intensity standard for performance verification. SRM 2942 is in the form of a solid glass, standard sized cuvette (12.5 mm x 12.5 mm x 45 mm) with three polished long faces for 90 degree detection and one frosted long face for front-face or epifluorescence detection.

SRM 2942 can be used in combination with pre-existing, fluorescent glass SRMs 2940 (orange emission) and 2941 (green emission), along with SRM 936a, Quinine Sulfate Dihydrate, a dye-based blue emission standard. This combination allows the user to cover the UV and visible regions from 320 nm to 780 nm. The high photostability of SRMs 2940, 2941 and 2942 make them particularly useful as day-to-day intensity standards, even when spectral correction is not needed or when the excitation wavelength differs from that used for certification.

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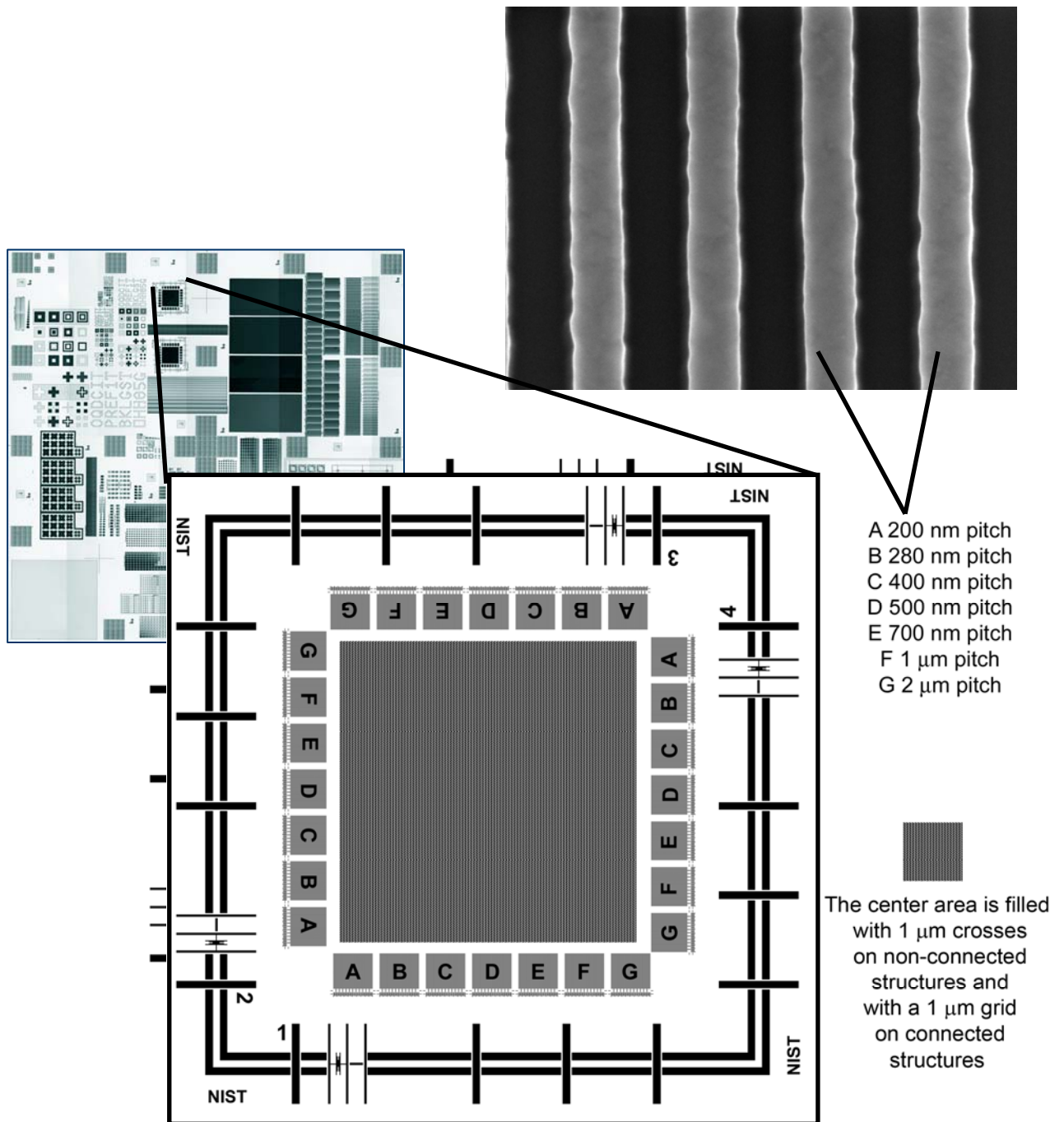
Reference Material (RM) 8820: A New Scanning Electron Microscope Scale Calibration Artifact

NIST is introducing a new scanning electron microscope (SEM) scale calibration artifact called Reference Material (RM) 8820. RM 8820 is primarily intended to be used for calibrating the X and Y scale (or magnification) in SEMs from less than 10 times magnifications to more than 100 000 times magnifications. Most SEMs require a set of calibration structures to cover the full range of possible magnifications and this standard is designed to meet that need. Like its predecessor RM 8090, the new standard RM 8820 was designed to provide good contrast at both low and high electron landing energies (accelerating voltages). RM 8820 can also be used for non-linearity measurements, especially at lower than 10 000 times magnifications. For these purposes, RM 8820 can be used on/in any other type of microscope, such as optical and scanning probe microscopes.

RM 8820 has been lithographically fabricated on a 20 mm x 20 mm silicon chip in collaboration with SEMATECH. The NIST pattern is a part of a very large array of test structures that were designed for various dimensional metrology purposes useful to semiconductor production technologies (see Figure). All the test structures are included on the RM. The RM 8820 parts of the chip are marked with letters "NIST" and are readily visible with the naked eye as small bright squares within the large chip. The RM structures have pitches ranging from 200 nm to 1.5 mm in both X and Y directions. In the center of the RM 8820 pattern, there is a large expanse of structures for focusing, astigmatism correction and for scan linearity measurements. There are two sets of identical X and Y pitch calibration structures. These are marked with numbers 1 and 3 for the X direction and 2 and 4 for the Y direction.

The RM 8820 samples were fabricated on 200 mm Si wafers using 193 nm ultraviolet light lithography and a dry etch process that formed all the patterns from an amorphous Si layer deposited on the silicon substrate with a thin silicon oxide layer in between. This 2 nm thin SiO₂ was used as an etch stop. The average thickness of the amorphous Si layer was found to be 97.3 nm (with a standard deviation (STD) of 1.6 nm). All amorphous silicon patterns exhibit a natural edge unevenness or edge roughness. This is due to the lithography and etch processes and the structure of the polycrystalline Si material used in the fabrication of RM 8820. This edge roughness however does not have a very large effect on the pitch determination if a large enough number of pitches are considered in each pitch measurement.

The chip is intended to be mounted by the user on the proper stub, wafer or sample holder suitable for their particular instrument. Utmost care should be taken in the handling and mounting of the sample. Spring-loaded fasteners or very small amount of carbon conductive paste applied at two corners of the chip have been found to work well. In use, electron beam induced contamination will be deposited on the sample depending on the handling, instrument cleanliness, electron beam current and accelerating voltage used. Only the user, have control over these parameters, but it is possible to achieve cleanliness so that even after 10 minutes of continuous imaging there will be no visible change in the quality of the image and the measured value of the pitch. This may require the use of methods that are designed to clean the sample and the sample chamber and its vacuum system.



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The authors would like to thank and acknowledge the collaboration of SEMATECH and the Advanced Metrology Advisory Group for assistance in the development of this standard and the NIST Office of Microelectronics Programs for partial funding of this work.

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Renewals

SRM 640d Silicon Powder, Line Position and Line Shape Standard for Powder Diffraction

SRM 917c D-Glucose (Dextrose)

SRM 956c Electrolytes in Frozen Human Serum

SRM 972 Vitamin D in Human Serum

SRM 2092 Low-Energy Charpy V-Notch

SRM 2096 High-Energy Charpy V-Notch

SRM 2259 PCB Congeners in 2,2,4-Trimethylpentane

SRM 2686a Clinkers for Phase Analysis

SRM 2711a Montana Soil II

SRM 3122 Hafnium Standard Solution

Revisions

Certificate Revisions—Are You Using These Materials?

This is a list of our most recent certificate revisions. Users of NIST SRMs should ensure that they have the most recent certificates. NIST updates certificates for a variety of reasons, such as to extend the expiration date or to include additional information gained from stability testing. If you do not have the most recent certificate for your material, you can print or view a copy from the website at:

http://www.nist.gov/srm or contact SRM at:

Phone: 301-975-2200 **Fax:** 301-926-4751 **Email:** srminfo@nist.gov

SRM 36b Chromium-Molybdenum Steel

Technical Changes

SRM 58a Ferrosilicon (73 % Si)

Technical Changes

SRM 121d Stainless Steel (Cr 17-Ni 11-Ti 0.3) (AISI 321)

Technical Changes

SRM 126c High Alloy Steel, High Nickel

Technical Changes

Revisions (continued)

SRM 191c pH Standards

New Expiration Date: 31 October 2011

SRM 195 Ferrosilicon (75 % Si-HP Grade)

Revised values for all constituents

SRM 200a Potassium Dihydrogen Phosphate

New Expiration Date: 31 August 2014

Editorial Changes

SRM 211d Toluene Liquid Density- Extended Range

Technical Changes

SRM 348a High-Temperature Alloy A286

Revised values for all constituents

SRM 970 Ascorbic Acid in Frozen Human Serum

New Expiration Date : 30 June 2014

SRM 1158 Specialty Steel, High Nickel (36 % Ni)

Revised values for all constituents

SRM 1230 High-Temperature Alloy A286

Revised values for all constituents

SRM 1614 Dioxin in Isooctane

New Expiration Date : 31 January 2019

Editorial Changes

SRM 1617a Sulfur in Kerosene – High Level

Addition of Information Values

SRM 1845 Cholesterol in Whole Egg Powder

New Expiration Date: 11 June 2009

SRM 1922 Liquid Refractive Index- Mineral Oil

Added information regarding the Brix Scale

SRM 2629a Nitric Oxide in Nitrogen Lot #50-G-XX

New Expiration Date: 01 August 2011

SRM 2638a Carbon Monoxide in Nitrogen (Nominal 5000 $\mu\text{mol/mol}$) Lot 55-E-XX

New Expiration Date: 01 June 2017

Revisions (continued)

SRM 2735 Nitric Oxide in Nitrogen (Nominal 800 $\mu\text{mol/mol}$) Lot 141-C-XX

New Expiration Date: 01 March 2013

Revised certified values of nitric oxide and total oxides of nitrogen

SRM 2751 Methane in Air Lot #212-C-XX

New Expiration Date : 01 June 2016

SRM 3159 Thorium Standard Solution Lot 992912

New Expiration Date : 30 November 2011

Editorial Changes

SRM 3198 Electrolytic Conductivity Standards Solutions

New Expiration Date: 03 September 2010

SRM 4323b Plutonium-238 Solution

Extension of the Certification Period

ORDER NIST SRMS ONLINE

You can now order NIST SRMs through our new online ordering system, which is constantly being updated. **PLEASE NOTE:** Purchase orders and credit cards may be used when ordering an SRM online. This system is efficient, user-friendly, and secure. Our improved search picks up keywords on the detail page along with the words in the title of each SRM.

In addition, we are in the midst of a project to add numerous certificate references for each SRM online. Please also note we are adding many historical archive certificates online for your convenience.

<https://srmors.nist.gov>

Please Register Your Certificate Online!

Users of NIST SRMs should ensure that they have the most recent certificates.

<http://www.nist.gov/srd/srmregform.htm>

COMING SOON

January 2010 Standard Reference Materials Catalog

NIST SRM 2009/2010 Exhibit Schedule



MS&T Show

October 25-29, 2009

David L. Lawrence
Booth #314
Convention Center
Pittsburgh, PA

Chem Show

November 17-19, 2009

Jacob Javits Convention Ctr
Booth # 233
New York City, NY

Materials Research Society Fall Meeting MRS

November 30–December 4, 2009

Hynes Convention Ctr
Booth # 216-218
Boston, MA

AnaLabAsia 2009

December 1-4, 2009

Suntec Singapore
Singapore

The Minerals, Metals, and Material Society (TMS 2010)

February 14-18, 2010

Washington State Convention Ctr
Booth #604
Seattle, WA

American Academy for Forensic Science (AAFS)

February 23-26, 2010

Washington State Convention Ctr
Seattle, WA

Pittsburgh Conference (PITTCON)

March 1-4, 2010

Orange County Convention Ctr
Orlando, FL

American Chemical Society (ACS)

March 21-25, 2010

Convention Center
San Francisco, CA

Analytica 2010

March 23-26, 2010

Munich Trade Fair Centre
Munich, Germany

NOBCCHE

March 29-April 3, 2010

Marriott Marquis Hotel
Atlanta, GA

Materials Research Society Spring Meeting (MRS)

April 5-9, 2010

Moscone West
San Francisco, CA

IFT – Food Expo

July 18-20, 2010

McCormick Place South
Booth #609
Chicago, IL

AACC Clinical Lab Expo

July 27-29, 2010

Anaheim Convention Ctr
Anaheim, CA

NCSL Symposium

July 25-29, 2010

Rhode Island Convention Ctr
Providence, RI

American Chemical Society (ACS)

August 22-26, 2010

Boston Convention and Exhibition Ctr
Boston, MA

Analytica China

September 15-17, 2010

Shanghai, China

Association of Analytical Communities (AOAC)

September 26-29, 2010

Royal Pacific Resort
Orlando, FL

MS&T

October 17-21, 2010

George R. Brown Convention Ctr
Houston, TX

Materials Research Society Fall Meeting (MRS)

November 30–December 2, 2010

Hynes Convention Ctr
Boston, MA



IMPORTANT MESSAGE when accessing the SRM Website:
<http://www.nist.gov/srm>

PLEASE NOTE: New security settings to protect your private information have been mandated by the U.S. government. The following are instructions to upgrade your browser settings so you can view SRM documents, perform searches and order online.

If you are using Mozilla Firefox

- 1) You must have the most current version – 3.0.5
- 2) You must enable SSL 3.0
- 3) You must enable TLS 1.0

To enable SSL 3.0 and TLS 1.0

- 1) Go to Tools – Options - Advanced
- 2) Click the encryption tab
- 3) Under Protocols, ensure that both boxes are checked

If you are using Internet Explorer

- 1) You must have the most current version – IE 6.0 or IE 7.0
- 2) You must enable SSL 3.0
- 3) You must enable TLS 1.0

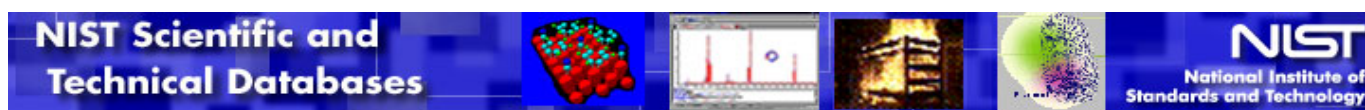
To enable SSL 3.0 and TLS 1.0

- 1) Go to Tools – Internet Options - Advanced
- 2) Scroll down to security
- 3) Ensure that both SSL 3.0 and TLS 1.0 are checked

Other NIST Measurement Services Websites of Interest



Standard Reference Materials – Historical Archived Certificates/Reports of Investigation
http://ts.nist.gov/MeasurementServices/ReferenceMaterials/archived_certificates.cfm



NIST Scientific and Technical Databases
<http://www.nist.gov/srd>

NIST Data Gateway
<http://www.srdata.nist.gov/gateway>



Calibrations Services
<http://www.nist.gov/calibrations>

Please take the time to rate our products:
<http://tsapps.nist.gov/msdsurvey/Default.aspx>

We appreciate your feedback!