

# NEH Application Cover Sheet

## Challenge Grants

### PROJECT DIRECTOR

---

Mr. Ronald Brashear  
Director of the Othmer Library  
315 Chestnut Street  
Philadelphia, PA 19106-2702  
UNITED STATES

**E-mail:** rbrashear@chemheritage.org  
**Phone(W):** 215-873-8284  
**Phone(H):**  
**Fax:**

**Field of Expertise:** History and Philosophy of Science/Technology/Medicine

### INSTITUTION

---

Chemical Heritage Foundation  
Philadelphia, PA UNITED STATES

### APPLICATION INFORMATION

---

**Title:** *Creating a Collections Endowment for the Chemical Heritage Foundation*

**Grant Period:** From 1/2010 to 6/2013

**Field of Project:** History and Philosophy of Science/Technology/Medicine

**Description of Project:** The Chemical Heritage Foundation (CHF) requests an NEH grant in the amount of \$600,000 to create a \$2.4 million endowment for collections that will generate an annual income of \$120,000. This income will fund the acquisition and preservation of historical materials related to the history of chemistry and related sciences, technologies, and industries. CHF already possesses unmatched collections in this area -- including art, artifacts, archives, photographs, rare books, oral histories, journals, and other printed materials. An endowment for collections will enable CHF to systematically purchase or otherwise obtain materials that anticipate future trends in historical research: specifically, pre-1875 printed books and journals, the personal papers of current scientists, and the archives of science-based corporations and organizations. This will benefit the humanities by gathering historical materials that comprehensively reflect the evolution of understanding of the material world.

### BUDGET

---

|                        |              |                        |              |
|------------------------|--------------|------------------------|--------------|
| <b>Fiscal Year # 1</b> | \$170,000.00 | <b>Total from NEH</b>  | \$600,000.00 |
| <b>Fiscal Year # 2</b> | \$201,667.00 | <b>Non-Federal</b>     |              |
| <b>Fiscal Year # 3</b> | \$228,333.00 | <b>Total</b>           | \$600,000.00 |
| <b>Fiscal Year # 4</b> |              | <b>Matching Ratio:</b> |              |

### GRANT ADMINISTRATOR

---

Mr. Richard Ulrych  
Manager of Project Development  
315 Chestnut Street  
Philadelphia, PA 19106-2702  
UNITED STATES

**E-mail:** rulrych@chemheritage.org  
**Phone(W):** 215-873-8286  
**Fax:** 215-873-5286

## TABLE OF CONTENTS

|   |                 |
|---|-----------------|
| Table of Contents                         | Page 1          |
| Abstract                                  | Page 2          |
| Budget                                    | Page 3          |
| Institutional Fact Summary                | Page 4          |
| Financial Summary                         | Page 5          |
| Narrative                                 | Pages 6 – 30    |
| List of Trustees and Staff                | Pages 31 – 34   |
| Project Director's Resume                 | Pages 35 – 36   |
| Letters of Support                        | Pages 37 – 50   |
| List of Affiliate Organizations           | Pages 51 – 52   |
| Strategic Plan                            | Pages 53 – 97   |
| Collections Policy                        | Pages 98 – 133  |
| Beyond the Gallery (CHF printed material) | Pages 134 – 148 |
| Other Printed Materials About CHF         | Pages 149-189   |

## Abstract

The Chemical Heritage Foundation (CHF) requests a NEH Challenge Grant in the amount of \$600,000 to support the creation of a \$2.4 million endowment for collections. This endowment will generate an annual income of \$120,000, which will support both acquisition and preservation (\$100,000 annually for acquisition, and \$20,000 annually for preservation averaged over five years).

CHF is a 501 (c) (3) organization dedicated to recording, preserving, and making known the history of chemistry and related sciences, technologies, and industries. Created in 1982, it is today a vital financially solid organization with an endowment of over \$130 million. It is governed by a 16-member Board of Directors and led by Dr. Thomas R. Tritton, who serves as President and CEO. In its 27 years of existence, CHF has become a world center for research in the history of the molecular sciences, technologies, and industries. It possesses unmatched collections of art, artifacts, archives, photographs, rare books, oral histories, journals, and other published materials that document and record the history of the molecular sciences and technologies from ancient times to the present. Greatest collections strengths are materials relating to chemistry and alchemy, distillation, bleaching and dyeing, the study and use of mineral waters, the early gas-lighting industry, perfumery, and extraction and production processes. The printed collections contain hundreds of objects, primarily from the 17<sup>th</sup> and 18<sup>th</sup> centuries that are not found in other libraries. All of our collections are accessible to scholars and they attract researchers from around the world, many of whom come to us through CHF funded fellowships and travel grants. To foster a sense of community, we hold weekly meetings and bi-weekly seminars at which scholars present and discuss their research. Fellows at CHF have contributed numerous articles and books, including such works as Arthur Daemmrich's *Pharmacopolitics: Drug Regulation in the United States and Germany*, (2004); Mi gyung Kim's *Affinity, that Elusive Dream: A Genealogy of the Chemical Revolution* (2003); Gwen Elizabeth Kay's *Dying to Be Beautiful: the Fight for Safe Cosmetics* (2005); and Dora Bobory's *The Sword and the Crucible: Count Boldizsar Batthyany and Natural Philosophy in Sixteenth-Century Hungary* (2009).

Through its collections, CHF has become a meaningful partner to a number of humanities organizations. The library director is chair of the Philadelphia Area Center for History of Science and Vice-chair of the Philadelphia Area Consortium of Special Collections Libraries. Our collections also help it take the lead in developing conferences and symposia, which CHF collections staff and historians do annually. Our collections also contribute to and inform CHF's outreach activities in the humanities, as all such activities are collections-driven. In October 2008, we opened our museum of chemical history, which largely draws on our rich collections of artifacts.

Our collections have largely been obtained through donations or by purchases enabled by targeted large gifts. With an endowment for collections, CHF will be able to systematically develop its holdings in areas that anticipate trends in historical research. It will also be able to respond quickly to exciting purchasing opportunities. We will focus on the purchase of pre-1875 printed books and journals. CHF is weaker in the 19<sup>th</sup> century, which is a critical time for the development of modern molecular sciences, technologies, and industries. CHF will also focus on the acquisition of the personal papers of distinguished scientists and technologists and the archives of corporations and scientific organizations. In terms of preservation, endowment income will be used to preserve objects needing urgent care and also to support CHF's work in digital preservation and access. The latter is essential as scientists and engineers have moved to using word processors and electronic mail for their research and correspondence. Through such acquisition and preservation activities CHF ensures that it will be able to serve historians in the future by providing access to materials that comprehensively reflect the evolution of understanding of the material world through history. It will become the logical repository for the papers of those advancing innovation and its commercialization; it will become the place where science and technology-based corporations look to preserve their records; it will become an even more valuable resource for historians of science and technology. This, in turn, will further energize CHF's already strong fellowship program, attracting financial support for new fellowships humanities scholars.

## Challenge Grant Budget

### Chemical Heritage Foundation

|                            |           |           |
|----------------------------|-----------|-----------|
| Total NEH funds requested: |           | \$600,000 |
| Year 1                     | \$170,000 |           |
| Year 2                     | \$201,667 |           |
| Year 3                     | \$228,333 |           |

|                                |           |             |
|--------------------------------|-----------|-------------|
| Total nonfederal contributions |           | \$1,800,000 |
| Year 1                         | \$510,000 |             |
| Year 2                         | \$605,000 |             |
| Year 3                         | \$685,000 |             |

|   |  |                    |
|---|--|--------------------|
| <b>TOTAL GRANT FUNDS (NEH plus Match)</b> |  | <b>\$2,400,000</b> |
|---|--|--------------------|

#### Planned Expenditures

##### Endowed

|                                    |  |             |
|------------------------------------|--|-------------|
| Principal                          |  | \$2,400,000 |
| Rate of return to be expended      |  | 5%          |
| Projected annual expendable income |  | \$120,000   |
| Uses of endowment income           |  |             |
| a. Acquisition                     |  | \$100,000   |
| b. Preservation                    |  | \$20,000    |

## Institutional fact summary

**History and mission:** The Chemical Heritage Foundation (CHF) was founded as the Center for the History of Chemistry in 1982 as a joint venture of the University of Pennsylvania and the American Chemical Society; incorporated in 1987 as an independent 501 (c) (3); and in 1992 renamed CHF to better reflect its interdisciplinary nature. CHF preserves and makes known the history of chemistry and related sciences, technologies, and industries, striving to enhance public understanding of the impact of these fields in shaping the modern world.

**Governance and administration:** CHF is governed by a 16-member Board of Directors, with advice from a Board of Overseers (36 members) and a Heritage Council (40 members, mostly representatives of CHF's affiliated organizations). Thomas R. Tritton has been President and CEO since January 2008.

**Physical facilities:** CHF's 101,500 ft<sup>2</sup> facility is in the heart of Philadelphia's historic district. The reading room and reference area occupies 12,000 ft<sup>2</sup>; collections/storage occupies 36,000 ft<sup>2</sup>; CHF's museum and conference center occupies 36,000 ft<sup>2</sup>; and staff offices occupy 17,500 ft<sup>2</sup>.

**Humanities staff size and composition:** Twenty of CHF's 48 regular employees hold advanced degrees in the humanities. Seven of these hold Ph.D.s in humanities fields. An additional Ph.D.-level position is currently open.

**Humanities collections:** CHF is the world's leading repository for materials documenting the history of chemistry and related sciences, technologies, and industries. CHF's rare books, journals and other published materials, archives, images, prints, paintings, instruments and other artifacts are a rich resource for humanities scholarship in science, technology, and related industries.

### Humanities activities and audiences

*Library:* open to the public, appointment suggested, weekdays 10 AM–4 PM. (In 2009 there were 415 visitors; 650 reference requests; and 158 distinct uses.)

*Beckman Center research fellowships:* annually 6 or 7 research fellows for 9 months, and 9 fellows for terms of 3 to 6 months.

*Publications:* *Chemical Heritage* magazine (circulation 20,000) published 3 times per year; 4 to 6 white papers annually; exhibit catalogs; conference proceedings; bi-weekly podcast; new monograph series with University of Chicago Press.

*Conferences:* two annual conferences on the nature of scientific and technological innovation; frequent national and international conferences on the history of science and technology (e.g., 12–13 June 2009 “Composition to Commerce: Chemistry, History, and the Wider World” attracted 45 participants, and 13–15 August 2009 “Philosophy of Chemistry 2009 Summer Symposium” attracted 38 participants).

*Museum:* History of Chemistry Museum opened in October 2008, with permanent exhibit *Making Modernity*, plus a series of temporary exhibits that focus on the impact of science on society. (14,951 visitors in 2009; attendance is free.)

*Programs:* weekly scholarly presentations, followed by discussion, focused on the work of CHF fellows or scholars from neighboring organizations (approximately 30 participants); monthly First Friday and Science on Tap events, four Civic Science and Fellow in Focus lectures annually (100+ audience), public oral history interviews (100+ audience). Attendance for these events is free.

*Audience:* CHF conferences on innovation attract persons from both industry and academia; this has also been the case with conferences on oral history, as well as such conferences as “The FDA at 100” in 2006. Other conferences (e.g. International Conference on the History of Alchemy and Chymistry in 2006 and “Philosophy of Chemistry 2009 Summer Symposium”) have attracted audiences exclusively from academia.

## Narrative

The Chemical Heritage Foundation (CHF) requests an NEH Challenge Grant of \$600,000 to be matched by \$1,800,000 in additional funds raised (a total of \$2,400,000), to establish an acquisition and preservation endowment for its collections. The income generated by this endowment (\$120,000) will support acquisition and preservation at a 5 to 1 ratio annually (\$100,000 for acquisition/\$20,000 for preservation on average).

## **Background**

CHF is a library, museum, and research center that preserves, records, and makes known the history of chemistry and related sciences, technologies, and industries. It is the leading world repository of materials and objects supporting historical research of these areas of endeavor. It was established in 1982 as a joint venture of the American Chemical Society and the University of Pennsylvania. Originally called the Center for the History of Chemistry, CHF became an independent 501(c)(3) organization in 1987, and became known as the Chemical Heritage Foundation in 1992. CHF's Founding President, Arnold Thackray, directed CHF through 2007. In 2008, Thomas R. Tritton became CHF's President and CEO.

The chief governance body of CHF is its Board of Directors, made up of 16 persons from the chemical and humanities communities. CHF also depends on the guidance and advice of a 36-member Board of Overseers and a 40-member Heritage Council, which largely consists of representatives of CHF's affiliate organizations (see Attachment 10). CHF is a financially strong institution; its endowment today is over \$130 million. In fiscal year 2010, CHF's endowment generated an income of \$6.8 million—a significant contribution to CHF's 2010 operating budget of \$9.7 million.

CHF's staff currently consists of 48 regular employees and 8 consultants working more than 20 hours per week. Of the regular staff, 20 have advanced degrees in the humanities, including seven Ph.D.s. An additional Ph.D.-level position is currently vacant and a search is underway. Organizationally, CHF is

divided into four operating arms: 1) the Donald F. and Mildred Topp Othmer Library and Special Collections of Chemical History, a research library housing CHF's collections of books, archives, art, and artifacts; 2) the Beckman Center for the History of Chemistry (part of the Othmer Library), which oversees CHF's fellowship program and organizes conferences and workshops at CHF; 3) the Center for Contemporary History and Policy, which provides historical perspective to current policy issues in science, technology, and associated industries; and 4) the Roy Eddleman Institute for Interpretation and Outreach, which is responsible for CHF's museum of chemical history and for its outreach activities.

CHF is a member of the Philadelphia Area Center for the History of Science (PACHS), a consortium of 12 regional institutions that provides fellowships and promotes understanding of the history of science, technology, and medicine. Included in PACHS are the Hagley Museum and Library, the American Philosophical Society, the Academy of Natural Sciences, the College of Physicians of Philadelphia, Princeton University, the University of Pennsylvania, the Historical Society of Pennsylvania, the Library Company of Philadelphia, the Franklin Institute, the Wagner Free Institute of Science, and Johns Hopkins University. CHF also actively participates in the 33-member Philadelphia Area Consortium of Special Collections Libraries and is a member of the RLG Partnership of OCLC, a global alliance of like-minded institutions that focuses on improving operational processes and shaping new scholarly services by directly engaging senior managers. CHF also intends to apply in 2010 for membership in the Independent Research Libraries Association and the American Council of Learned Societies.

In preparation for its 25<sup>th</sup> Anniversary in 2007, CHF committed to a strategic plan that was adopted by the Board of Directors in April 2005 (see Attachment 11). The 25<sup>th</sup> Anniversary Strategic Plan drew from a constituent survey in 2004 that included past and current board members, donors, prospective donors, and other stakeholders. Goals in the 25<sup>th</sup> Anniversary Strategic Plan are outlined for four areas: 1) Collections; 2) Outreach; 3) CHF's Reach; and 4) Research. Since the adoption of the 25<sup>th</sup> Anniversary Strategic Plan, CHF's Senior Staff, comprised of the Directors of each of CHF's divisions as well as the President and CEO and the Vice Presidents for Finance and Institutional Advancement, have

developed an addendum to the plan that defines CHF's communications plan (see Attachment 11). In the summer of 2010 a retreat will be held involving CHF's Senior Staff and Board of Directors. The goal of the retreat is to create and draft a new strategic plan, which will then be discussed with other CHF constituents and should be finalized in the fall of 2010.

In connection with goals outlined in strategic planning, CHF has incorporated more substantive assessment and evaluation into all of its programming. CHF's public outreach activities offer historical context as a way to illuminate current humanistic issues and contemporary realities. In this way, CHF is invested in attitudinal changes in its audiences. While such changes are difficult to measure, CHF has adopted various tactics to collect data that informs programming. Audience surveys are commonly employed. We have also partnered with the University of the Arts' Museum Studies Program in an assessment process that captures museum-audience demographics. Finally, most of our grant-funded programs now include external evaluation as part of the project plan and budget.

### **Growth of CHF Collections**

Soon after its creation, CHF began to preserve and bring under one roof the materials and objects that record and mark the history of chemistry and related sciences, technologies, and industries—artwork, artifacts, publications, and the archives of individuals, corporations, and scientific organizations. CHF's founders saw that these materials and objects were being lost or dispersed and that an institution to house, preserve, and create access to them was needed.

In the beginning, given limited financial resources, CHF heavily relied on object/artifact donations. As CHF developed, it also acquired modest acquisition funds, so its important collections were obtained through donations or through purchases made possible by directed major gifts. For example, in 1988, CHF received 30,000 volumes from The Chemists' Club of New York City; in 1999, it acquired 45 alchemical paintings, over 200 works on paper, and the laboratory glassware of Louis Pasteur through a donation of Fisher Scientific International; in 2001, over 100 scientific instruments as well as supporting documentation and thousands of images were donated to CHF by the Perkin-Elmer Corporation; in 2004,

a generous gift of \$10 million by Gordon and Betty Moore enabled CHF to purchase the 6,000-volume Roy G. Neville Historical Chemical Library (see *The Whole of Nature* in attachment 13); and in 2008, the Post Street Archives donated 683 linear feet of Dow Chemical Company archives and Herbert Dow's papers. Today these collections, organized within the Othmer Library, make CHF the leading world repository of materials documenting the history of chemistry and related sciences, technologies, and industries. CHF's especially strong holdings are

- Primary printed books from the 16<sup>th</sup> through the 20<sup>th</sup> centuries;
- Extensive runs of foreign-language journals of chemistry, chemical engineering, and related topics dating from 1800;
- The personal papers of Nobel laureates;
- Archival collections in areas of polymer chemistry, dyes and pigments, nanotechnology, instrumentation, and quantum chemistry;
- Archival collections of businesses and organizations, including The Chemists' Club, the Gordon Research Conferences, the International Union of Pure and Applied Chemistry, Dow Chemical Company, and Rohm & Haas;
- Image collections, such as the William Haynes Portrait Collection, the Travis Hignett Collection of images from the USDA, and the Joseph X. Labovsky Collection of images documenting the history of nylon;
- An unique collection of analytical scientific instruments from the middle of the 20<sup>th</sup> century;
- The Schlinger Collection of 20<sup>th</sup>-century glass apparatus and the John Payne Collection of 19<sup>th</sup>-century scientific apparatus;
- A collection of close to 100 chemistry sets from the 20<sup>th</sup> century;
- Eighty-nine oil paintings depicting early-modern chemical activities, concentration in the 17<sup>th</sup> and 18<sup>th</sup> centuries;
- Approximately 250 17<sup>th</sup>- through 19<sup>th</sup>-century prints depicting scientists, laboratory scenes, caricatures, and satirical topics;

➤ And 62 watercolors on pith paper showing textile production of ramie from circa 1820 China.

While object/artifact donations have been valuable in establishing a significant collection in a short period of time, this passive method of collecting resulted in an idiosyncratic collection that is extremely deep in some areas but shallow in others. In 2005, CHF undertook a major strategic planning exercise to address this and other issues. One outcome of the exercise was to concentrate on molding the library into a fully functioning independent research library, and a great deal of progress has been made toward this goal since 2006. CHF realized that it needed to hire a library director with expertise in the history of science and research-library management. After a national search, in 2006 CHF selected Ronald Brashear, former Head of Special Collections at the Smithsonian Institution Libraries and Curator of History of Science at the Huntington Library, to be the new Director of the Othmer Library. Brashear was charged with turning the Othmer Library into a significant research center for the history of science, and soon a joint collections policy was developed with contributions from the library and collections staff of CHF as well as with the advice of several leading librarians in the United States (see Attachment 12). The new library director applied his experience in having crafted the Smithsonian Institutions' Collections Policy (SD600) to appropriate sections of CHF's policy. This policy was completed, reviewed by the Collections Committee of CHF's Board of Directors, and approved by the full board in 2008.

The library director also established oversight of the fellowship and travel-grant program and quickly turned it into one of the country's leading providers of fellowships in the history of science, technology, and industry. External peer-review selection processes based on the models of major research libraries were established and the positions of Curator of Rare Books and Associate Director of the Beckman Center were created and filled after international searches for qualified historians of science. CHF has now begun to address its need to continue to build its collections in a systematic way through targeted donations and intelligent purchases. The present request for support of an endowment for collections acquisition and preservation reflects CHF's desire both to build and maintain its collections in the long term and to support and increase their accessibility for ongoing research in the humanities.

CHF's collections reflect a greater diversity of research topics and time periods in the history of science and technology than is reflected in the institution's name. While considerable material supports the history of chemistry in the modern sense of that scientific discipline, CHF has been very active in creating collections and supporting research in subjects relating to: 1) the scientific study of matter and materials; 2) how people have shaped matter in a variety of ways; and 3) the impact this has had on culture and society. CHF has approximately 50,000 titles of primary sources of printed materials (including 4,000 serial titles) that span the 15<sup>th</sup> to the 20<sup>th</sup> centuries, including the first translations of ancient and medieval authors. Greatest subject strengths are chemistry and alchemy, distillation, bleaching and dyeing, the study and use of mineral waters, the early gas-lighting industry, perfumery, and the extraction and production processes of various substances—including sugar, saltpeter, steel, glass, alum, vitriol, porcelain, beer, and wine.

The printed collections contain hundreds of dissertations and academic orations, primarily from the 17<sup>th</sup> and 18<sup>th</sup> centuries, which are not found in other libraries. Their subjects cover a remarkable range of topics: from the transmutation of metals; down through chemical affinity, atomic theory, and complex analyses; to the elemental nature of hydrogen and other newly discovered substances. As historian of science Lawrence M. Principe has noted, CHF's collections contain "a substantial fraction of all the major works in the history of chemistry, and a vast number of rare or unique pieces that will prove extremely valuable to scholars."<sup>1</sup> CHF also has over 5,250 linear feet of archival materials. These include the personal papers of over 45 scientists and engineers (among them six Nobel Prize winners—Johann Deisenhofer, Paul Flory, Paul Lauterbur, Alan MacDiarmid, Sir John Pople, and Richard Smalley) and the records of professional and trade organizations and corporations in the fields of the chemical sciences (including the historical archives of the Dow Chemical Company and Rohm & Haas). And CHF is creating a very important collection of comprehensive, professionally edited oral history interviews with leading figures in chemistry and related sciences, technologies, and industries. This collection has over

---

<sup>1</sup> Lawrence M. Principe, "A New History of Chemistry Library at the Chemical Heritage Foundation," *Ambix* 53 (2006): 77-82.

700 oral histories in its holdings. A bound copy of each oral history and all information pertaining to the interview are available through the Othmer Library.

CHF has impressive collections of art and images. It has over 90 paintings from the 17<sup>th</sup> through the 19<sup>th</sup> centuries, many depicting alchemists at work. There are also stunning portraits of Robert Boyle and Joseph Priestley. Over 200 works on paper include satirical etchings and engravings from the 18<sup>th</sup> century as well as depictions of alchemical scenes and portraits of prominent figures in the history of chemistry. CHF possesses a large collection of postage stamps featuring famous chemists and chemical discoveries. It also holds thousands of photographs, ranging from formal portraits, group shots, and personal photographs, to scenes of early laboratories, industrial sites, and historic events.

CHF preserves and creates access to large and varied collections of artifacts. These include collections of early burners, furnaces, crucibles, blowpipes, stills, beakers, flasks, and retorts. CHF has an unparalleled collection of first-of-their-kind electronic chemical instruments (together with instrument manuals and advertising materials). CHF houses one of the best public collections of chemistry sets, with approximately one hundred different sets from all over the world. It has a unique collection of artifacts related to plastic: objects from the early days of nylon production at DuPont; Bakelite objects; and celluloid objects. And it has numerous artifacts related to electrochemistry: early batteries, light bulbs, vacuum tubes, transistors, computer chips, samples of elements discovered by electrolysis, and consumer products made possible by electrochemical processes (e.g., aluminum jewelry, early telephones, transistor radios, hearing aids, and an electroplated tea set).

All of CHF's research collections are accessible to scholars through the Donald F. and Mildred Topp Library and Special Collections of Chemical History. The collections are in closed stacks (with the exception of the reference collection) and are available to staff and fellows from 9 a.m. to 5 p.m., Monday through Friday, and to other visiting scholars from 10 a.m. to 4 p.m., Monday through Friday. The printed and archival collections are searchable on the Internet through the online public access catalog on CHF's Web site. Materials are requested for use in the reading room by scholars and are provided in a very short time. Staff and fellows can check out secondary printed sources and modern primary printed sources to

their offices, but all rare books and archival materials must be used in the reading room under the supervision of library staff. In the last year library staff recorded 158 distinct uses of the reading room for rare-book and archival research. Hand-held digital photography of non-copyrighted material is allowed by readers for reference purposes. Photocopies and high-quality digital photography are also done by CHF staff for a basic fee. Staff and fellows may also request materials not held in the Othmer Library by a variety of document-delivery methods available.

### **CHF's Collections' Impact on the Humanities**

To understand the impact of CHF's collections, it is necessary to see how they work hand-in-hand with all of CHF's efforts to stimulate research and writing in the humanities ( see *Beyond the Gallery* in Attachment 13). First, the collections are a key component of the fellowship and travel-grant program, with which CHF fosters a vibrant scholarly community. Second, the collections prompt CHF's support of scholarly publications. Third, they are the basis for CHF's participation in humanities organizations. Finally, the collections create a context for the leading role that CHF plays in organizing international conferences and symposia.

CHF's diverse, rich collections attract scholars from all continents—not only historians of science, but also those specializing in the history of art, women's studies, literature, philosophy, and law. CHF enhances the scholarly impact of its collections by annually providing seven academic-year fellowships and a similar number of short-term fellowships, on average. It also offers a dozen travel grants that make it possible for researchers to work with CHF's collections for one to four weeks.

Scholars coming to CHF research a diverse range of topics that reflect the wealth of its collections, from the history of 15<sup>th</sup>-century alchemy to the development of 20<sup>th</sup>- and 21<sup>st</sup>-century materials science. The fellows thrive in a setting that provides them with the needed resources to concentrate on their work and successfully complete their Ph.D. dissertations, pursue postdoctoral research, or perhaps complete a book during a sabbatical. Together with several historians on the CHF staff, the fellows and travel grantees create a fascinating scholarly community, which is further energized

by the work of the Beckman Center for the History of Chemistry personnel, who develop and execute scholarly symposia, conferences, and meetings at CHF throughout the course of the academic year. In the relatively tight funding situations that exist in the field of humanities research, CHF's Beckman Center is fast becoming a beacon for historians of science and technology all around the world.

CHF's fellowship program began modestly in 1992 with annual funding for a postdoctoral fellowship. In 1995, a second fellowship for a dissertation student was added. By 1998, there were four fellowships awarded. And in 2003, there were seven. Funding for the fellowships came from either dedicated endowments or annual gifts from foundations and organizations. Though the fellowship program was growing, it was a loose collection of different types of fellowships rather than a tight-knit community of like-minded scholars. After the strategic planning exercise, CHF's new library director melded the existing fellowships into a close-knit center for scholars under the Beckman Center. Rather than apply for very specific fellowships, scholars would now go through a competitive process to be selected as Beckman Center Fellows. Selection was done by an external peer-review committee to ensure fairness and independence, and the committee would select the best scholars and match them with a particular fellowship. The number of applications increased in both quantity and quality. Last year there were 35 applications for 15 fellowships. The fellowships are organized into three different types:

- 1) Postdoctoral fellowships of 9 months' duration;
- 2) Dissertation fellowships of 9 months' duration; and
- 3) Short-term fellowships of between 1 and 6 months' duration

The first two types form the core of the Beckman Center's research fellows. These consist of 6 to 7 scholars, both junior and senior in experience. The numerous short-term fellows rotate throughout the year, primarily doing research based on the library's collections. Funding is in place for seven 9-month fellowships and up to nine short-term fellowships through bequests, endowments, and renewable annual grants from foundations.

With the development of its fellowship program, and in conjunction with its collections, the Beckman Center has quickly become a major supporter of independent history of science research in the

United States. Since 1992, CHF has hosted over 80 long-term fellows, 50 short-term fellows, and nearly 150 travel grantees. In the last two academic years, the Beckman Center has had 29 fellows in residence (seven 9-month postdoctoral fellows, six 9-month dissertation fellows, and 16 short-term fellows), including international scholars from Italy, France, Japan, Hungary, Belgium, Greece, the United Kingdom, and the Netherlands. Their research covers such topics as the histories of brewing technology, alchemy, biomedical education, solid-state materials after World War II, the development of liquid crystal displays (LCDs), the development and use of anti-depressants, agricultural practices and their impact on georgic poetry in the 18<sup>th</sup> century, U.S.-Japanese scientific relations from 1880 to 1910, the rise and fall of trans fats, bisphenol-A health concerns, chemistry and medicine in the Low Countries in the 17<sup>th</sup> century, women's contributions to chemistry in the 18<sup>th</sup> century, Harold Urey, Antoine Lavoisier, James Smithson, Daniel Sennert, and Leo Baekeland. The fellows are given offices overlooking an atrium adjacent to the library's reading room, computers, a CHF email addresses, and an University of Pennsylvania ID card.

During the year all fellows have the opportunity to deliver progress talks on their research at brown-bag lunch lectures and to stay abreast with each others' scholarship at biweekly seminars. The brown-bag lunch lectures are informal talks by CHF fellows and staff and, occasionally, local scholars or visiting faculty at nearby universities. These talks on the history of science and technology usually draw between 25 and 30 attendees and include plenty of opportunity to discuss the implications of the research presented. Most of the attendees are CHF fellows and staff, with about 4 or 5 visitors from other nearby academic and research institutions. The biweekly seminars are much more focused affairs, with around a dozen scholars (consisting of CHF fellows and staff and PACHS fellows) discussing a pre-circulated research paper by one of the participants. This seminar has been hailed by our fellows for stimulating a high level of scholarly discourse. A current fellow from an Ivy League university told CHF that she wished she had a similar seminar series in her department.

The selection of fellows is done on an annual basis; a call for applications is made in the fall and an expert panel of three historians is assembled in the spring to select the fellows for the coming academic

year. CHF's research and collections staff are invited to read the applications as well and comment on their quality and how the collections at CHF would benefit the scholars. The peer-review committee selects fellows for the quality and originality of their work and the potential for future publications. Fellows at CHF have contributed numerous articles and books to the literature, including such representative works as Arthur Daemmrich's *Pharmacopolitics: Drug Regulation in the United States and Germany* (2004), Mi Gyung Kim's *Affinity, that Elusive Dream: A Genealogy of the Chemical Revolution* (2003), Gwen Elizabeth Kay's *Dying to be Beautiful: The Fight for Safe Cosmetics* (2005), Dóra Bobory's *The Sword and the Crucible: Count Boldizsar Batthyany and Natural Philosophy in Sixteenth-Century Hungary* (2009), Yoshiyuki Kikuchi's "Samurai Chemists, Charles Graham and Alexander William Williamson at University College London, 1863-1872," *Ambix* (2009), Audra Wolfe's "Germs in Space: Joshua Lederberg, Exobiology, and the Public Imagination, 1958-1964," *Isis* (2002), and Pamela Smith's "Science and Taste: Painting, the Passions, and the New Philosophy in Seventeenth-Century Leiden," *Isis* (1999). These and many more publications were informed both by the numerous collections at CHF and the interaction among the members of the scholarly community in residence.

### **CHF Support of Humanities Research**

CHF also supports a scholarly publications series in the history of science. In earlier years CHF attempted to be a publisher of a number of works, but it became clear that a more fruitful scenario was to partner with an academic press to encourage the publication of monographs in the history of chemistry and related sciences. After some negotiations, CHF signed a contract in 2009 with the University of Chicago Press to start *Synthesis*, a new series of monographs covering the history and social studies of the chemical sciences. Manuscripts are solicited from authors by CHF staff and an editorial board of noted historians: Angela N. H. Creager, John E. Lesch, Stuart W. Leslie, Lawrence M. Principe, Alan Rocke, E.C. Spary, and Audra Wolfe. Selected manuscripts are sent to expert readers for review. If the review is positive, a contract is signed between the author and the Chicago Press, and CHF provides a subvention to Chicago. The first book in the series is Alan Rocke's *Image and Reality: Kekulé, Kopp, and the Scientific*

*Imagination*, to be published in May 2010. Other manuscripts are in the pipeline, and CHF expects to produce one to two monographs per year in the series.

### **CHF's Participation in Humanities Organizations**

Because of its collections, CHF has become an active and meaningful partner in a number of humanities organizations in the last five years. The library director is currently the Chair of PACHS and the Vice Chair of the Philadelphia Area Consortium of Special Collections Libraries. CHF is an associate member of the Renaissance Society of America (RSA) and supports at least one special session on the history of science at the annual RSA meeting. For the 2010 meeting in Venice, CHF organized the session, "Star-Crossed Alchemy: The Interactions of Alchemy and Astrology in Early Modern Europe and Their Origins." The papers in this session were: Dóra Bobory, Institute of Habsburg History, Budapest, "Alchemy as *Astronomia Inferior*: The Role of Astrology in Early Modern Alchemical Experimentation;" Tayra Lanuza, Universitat de Valencia-CSIC, "Astrology and Alchemy before the Spanish Inquisition;" and Gabriele Ferrario, University of Cambridge, Genizah Research Unit, "The Rotation of the Heavens and of the Stars around the Four Elements: Islamic Mineralogy and its Alchemical Implications." CHF is now organizing a session for the 2011 Montreal meeting.

CHF staff and fellows present papers and/or promote the fellowship program and collections at a large variety of academic meetings throughout the year. Besides the RSA meetings, CHF is very active at the annual meetings of the History of Science Society, the Society for the History of Technology, the American Association for the History of Medicine, the Society for the Social Studies of Science (CHF supports the student section lunch every year), the Business History Conference, the Oral History Association, the American Historical Association, and the Organization of American Historians.

### **CHF's Role in Organizing Symposia and Conferences**

CHF has also provided sponsorship and support for a number of specialized conferences and workshops, most recently "CHYMIA: Science and Nature in Early Modern Europe (1450-1750)," at San

Lorenzo de el Escorial in Spain (2008), and the 6th International Conference on the History of Chemistry at Leuven in Belgium (2007). For both of those conferences, CHF staff participated in the sessions and the library director provided funds to support travel for scholars and special events. In addition, CHF will be a co-sponsor of the 2011 annual meeting of the American Association for the History of Medicine in Philadelphia. The library director will assist in fundraising for the meeting and will provide CHF funding support as a co-sponsor. CHF is also currently in discussion with the Hagley Museum and Library's Center for the History of Business, Technology, and Society to organize a conference at CHF in 2011 on the development and production of new materials. CHF will also partner with the American Philosophical Society and the University of Pennsylvania to host the quadrennial Three Societies Meeting (the History of Science Society, the British Society for the History of Science, and the Canadian Society for the History and Philosophy of Science) in Philadelphia in 2012. CHF will provide meeting space for the sessions and a great deal of additional in-kind support.

CHF has encouraged scholars to come and gather at its home in Philadelphia by hosting conferences and workshops on-site. By bringing scholars into its facilities, CHF can better engage them with its resources, and most importantly, the richness of its collections. After having been at CHF many scholars find opportunities to return and work in the collections or spend time doing research as fellows. In 2008, CHF completed construction of its conference center on the second floor of its building. This new state-of-the-art center provides six meeting rooms of various sizes (including two rooms that can be divided into smaller rooms) that can host large gatherings with a number of smaller parallel sessions. In July 2006, CHF hosted the International Conference on the History of Alchemy and Chymistry, where 30 scholars presented papers. The conference provided an opportunity for scholars to come together to evaluate and extend their understanding of the early history of chemistry (see *New York Times* article in attachment 14). The conference program deliberately scheduled open periods so as to encourage scholars to become acquainted with the alchemical books in the Othmer Library. Several attendees noted that they encountered works that were difficult if not impossible to find in Europe, and they later applied for fellowships to work at CHF. Selected papers from this event have been published as *Chymists and*

*Chymistry: Studies in the History of Alchemy and Early Modern Chemistry*, Lawrence M. Principe, editor (2007). CHF also hosted a conference in June 2009 titled “Composition to Commerce: Chemistry, History, and the Wider World,” organized by Seymour Mauskopf of Duke University, with 11 speakers presenting talks covering a range topics and time periods. The conference brought together some of the leading scholars of the history of chemistry, who both presented their current research and reflected on how their work relates to general themes in the recent historiography of chemistry and science. Plans are underway to submit the proceedings for a forthcoming issue of *Osiris*.

### **The Role of CHF’s Collections in Humanities Public Programming**

Just as CHF’s collections are the centerpiece for CHF’s efforts to contribute to the humanities through scholarship, they also significantly contribute to CHF’s humanities public programming.

Since the 1980s, CHF has used its collections to engage the public with the history of chemistry and related sciences and technologies. This effort has expanded as CHF’s collections have grown and diversified and as its outreach capacity has developed. This capacity was greatly increased in October 2008 by the opening of CHF’s museum, which created an important forum to present CHF’s collections. Though a number of items in the 12,000 ft<sup>2</sup> museum are borrowed, the vast majority come from CHF’s collections. The museum is open to the public free of charge five days a week, from 9 a.m. to 4 p.m. In its first year it attracted 14,951 visitors. A substantial portion of these were members of student groups (college and high-school) for whom CHF organized tours and developed educational materials ( see review of museum by the *Wall Street Journal* in Attachment 14).

CHF’s current approach to public programming is collections-driven and tied closely to the interpretive policies of the museum. It draws on the insights of volunteer chemists, CHF’s senior leadership and curatorial staff, its board members (particularly Robert G. W. Anderson), and the exhibit-design consulting firm Ralph Appelbaum Associates, which worked on the development of CHF’s museum. The key tenets of CHF’s public programming approach are the following: 1) the collections drive the storylines; 2) non-scientific audiences can be engaged by focusing on the societal impact of

science throughout history; 3) storylines should emphasize science as a social endeavor by explaining the historical context in which scientists lived and worked; 4) storylines need not be overwhelmingly chronological; and 5) do not repeat content that is readily available through other means.

Two recent outreach activities connected to CHF's collections are *Marvels and Ciphers: A Look Inside the Flask*, a temporary exhibit at CHF that explores personal and public responses to scientific breakthroughs with paintings, photographs, books, and cartoons from CHF's collections and The Secret Cinema at CHF, which complements *Marvels and Ciphers*, is partly funded by the Pennsylvania Humanities Council, and includes screenings of classic science-fiction features followed by discussions about the films' depictions of scientific discovery led by humanities experts..

A regular outreach effort, First Fridays at CHF, takes place each month and generally revolves around CHF's collections. The museum is open until 8 p.m., guest speakers are featured, and hands-on activities bring items in CHF's collections to life.

The Internet and CHF's Web site increasingly engage the public with the history of chemistry and related sciences and technologies by using items in the collections. For example, an early episode of CHF's biweekly podcast, *Distillations*, titled "The Chemistry of Texts," featured CHF's rare book collection with a 3-minute tour given by Ronald Brashear, Director of the Othmer Library. Many subsequent episodes of *Distillations* have also centered on CHF's collections. Objects from the collection are also put on Flickr with brief explanations of the object's historical significance. Interestingly, several images from CHF's Flickr account have been shared on other sites by users who have found them interesting. Currently, CHF's Web site is being redesigned. In the new version—to be launched this summer—items from CHF's collections will be featured regularly and in frequent rotation on the home page.

CHF's magazine, *Chemical Heritage*, received by over 20,000 subscribers, also uses CHF's collections to engage the public with history. A regular component of the magazine is *Treasures From the Vault*, which presents an image of an item from the collections and discusses its history. For example, in the Summer 2008 issue, a photograph of *La Pharmacie Rustique*, a print from CHF's art collection, was

presented. The image depicts an 18<sup>th</sup>-century pharmacist in his shop examining a urine sample. The image communicates the prestige of early pharmacists and the technology with which they worked.

Frequently, feature articles in *Chemical Heritage* center on CHF's collections. In the Fall 2009 issue CHF's Senior Archivist, Patrick Shea, draws on the corporate archives housed at CHF to write about the beginnings of the Dow Chemical Company and how its founder, Herbert Dow, applied chemical technology to efficiently extract bromine from brine. The article is enhanced by numerous images of early Dow operations that also come from the Dow archives. Images from CHF's photograph collection are often used to support articles in *Chemical Heritage*, including a feature at the back of each issue communicating the wealth of CHF's holdings as well as a curious and valuable element of the history of chemistry.

### **Impact of the NEH Challenge Grant on Humanities Research**

CHF has created a detailed collections policy that was approved in 2008 by its Board of Directors (see Attachment 12). This document establishes the policies that guide the development, stewardship, preservation, management, and disposition of all collections belonging to or otherwise under the control of CHF. The collections policy is an important step in transforming CHF from a collections-based institution greatly dependent on unsolicited donations to one that grows through targeted donations and intelligent purchases.

The second step in this transformation is the creation of a collections endowment. The NEH Challenge Grant, with its effect in encouraging matching gifts from a broadened base of supporters, is crucial in this regard. It will have a significant impact on the humanities by enabling CHF to acquire and preserve its collections in response to and in anticipation of scholarly trends in historical research. Using the collections policy as a guide, there are a number of basic collecting areas that will be the focus of funds generated by a new collections endowment. These areas include:

- Printed books and journals from before 1875: CHF's printed collections are weak in sources from the 19<sup>th</sup> century, which is a critical time for the development of modern chemistry and the

development of the chemical industries, including dyes, pharmaceuticals, explosives, and petrochemicals. The relative abundance of obscure 19<sup>th</sup>-century scientific texts and the resulting low prices make this an area of significant growth with a potentially large impact on history of science research.

- Archival collections starting from the 20<sup>th</sup> century: CHF foresees this as the strongest growth area for its collections and the one with the greatest research impact. Unique collections of personal papers of major scientists, engineers, and entrepreneurs are regularly becoming available and CHF needs to be in a good position to capture these materials. CHF has actually been contacted informally by a few major research libraries about its collecting plans as these libraries are not planning to collect archives in the sciences. Archival collections of historical business records and scientific societies and organizations are also areas of interest for CHF as historians of science continue to focus more and more on the social organization of science and less so on intellectual developments in science. While CHF expects that most of these archival collections will be donated, the collections endowment will be used to not only help transport and process these collections for quicker access by scholars, but also for travel to meet with potential donors and build a relationship with them that will result in their donating materials to CHF.

The collections endowment can also be used to acquire other items for the collections, such as instruments, artifacts, and works of art, but this will not be as comprehensive a collecting focus as early printed books and archives. CHF will continue to solicit donations of scientific instruments and apparatus from the 20<sup>th</sup> century on and avoid collecting much earlier instruments that are normally sold at high prices to collectors. CHF may also occasionally purchase relatively inexpensive modern works of art that complement our existing holdings, but expensive artworks from earlier centuries will likely only be obtained through donations.

The actual selection of materials for purchase will be left in the hands of CHF's professional curatorial staff and is reviewed by the Director of the Othmer Library if the material is of significant cost, on the order of \$1,000 or more. Acquisitions of \$10,000 or more are reviewed by the Board of Directors'

Collections Committee. In all cases the collections policy and appended collections development plan are the guidelines for selection (see Attachment 12). It should be noted that the holdings of other Philadelphia-area libraries will be searched prior to purchase so as to not unnecessarily duplicate items of relatively high cost. The Director of the Othmer Library will also oversee the distribution of the funds for collections acquisition in order to provide the greatest flexibility in case of special opportunities to purchase a significant collection or item during a given year.

The collections endowment will also be used for collections preservation needs. The amount spent on preservation will vary from year to year and depend primarily on the urgency of care. In general, from the income generated by our collections endowment, we anticipate spending approximately \$20,000 on average per year for preservation. CHF is fortunate to have focused on acquiring collections that are in relatively good condition, and those that do require treatment have not been left untended for too long. CHF has also developed a detailed disaster plan based on guidelines provided by a variety of conservation centers and library and archive organizations. This plan is now an appendix to our collections policy (see Attachment 12). Several preservation assessments were done of CHF's collections and facilities and these will guide fundraising for regular implementation of these assessments.

- 1) An initial assessment in 1997 by Garrison and Lull, shortly after CHF purchased its new building on Chestnut Street, led to special climate controls, air handling, and lighting systems in the collections storage areas.
- 2) CHF was awarded an NEH Preservation Assistance Grant in 2002 and surveyed roughly 200 paper-based artifacts and photographs. The assessment was done by CCAHA and resulted in estimates for conservation treatment and recommendations for housing items. CHF did not have the funds to treat all of the items in question but did treat a few that have since been placed on exhibition.
- 3) In May 2003 CHF conducted a survey of the rare books and monographs that had been donated by The Chemists' Club. The Chemists' Club funded the survey, which was conducted by Etherington Conservation Center. The survey did an item-level examination of the condition of

the rare book collection and an estimate of conservation costs. The monograph collections created an estimate of the number of books that required rebinding, boxing, or pamphlet binding. At this time only about a dozen items have actually been treated due to funding limitations.

- 4) Also in 2003 CHF participated in CCAHA's Subsidized Survey Program, which was partially funded by NEH. The program provided an overview survey of CHF's non-print collections with the goal to develop a preservation plan and establish priorities for preservation planning. The survey was completed in 2004 by members of CCAHA and the report had a direct impact on the CHF's strategic plan and the collections policy that followed.
- 5) Finally, in 2004, money from a private donor was used to perform an item-level preservation survey of CHF's newly acquired Roy G. Neville Historical Chemical Library. The survey was done by Etherington Conservation Center and provided an analysis of the entire collection of nearly 6,000 volumes. The survey examined each item and recommended treatment (if any) and included a cost and priority ranking for each item. So far 29 volumes have been treated as funding became available.

Three preservation areas of note that will be key for CHF are:

- 1) **SYSTEMATICALLY CONSERVING THE MANY COLLECTIONS ITEMS THAT HAVE BEEN ASSESSED BY PAST SURVEYS**—These will be done in established priority order and based on rational cost assessment. Indeed, many items in the print collections could be replaced more cheaply than they could by conservation treatment.
- 2) **KEEPING UP WITH THE LATEST DEVELOPMENTS IN DIGITAL PRESERVATION AND ACCESS**—CHF foresees the changing nature of archival collections from paper-based to born-digital materials as scientists and engineers have moved to using word processors, electronic mail, and other specialized software for their correspondence and research. CHF will use its collection endowment to assist in reformatting, online access of materials, and other new areas of interest.
- 3) **COVERING THE COST OF OUR MOST IMPORTANT CONSERVATION NEEDS**—CHF does not have an in-house conservation laboratory but has depended on such support from the Conservation

Center for Art and Historic Artifacts, the Northeast Document Conservation Center, and Etherington Conservation Services to provide conservation services for the collections' needs.

As CHF's collections grow they will be processed and cataloged so that scholars will be able to discover them on the Internet through CHF's online library catalog. Discovery by scholars will be aided by the new CHF Web site (planned to debut in the summer of 2010) that will allow announcements of major new acquisitions and highlight them on collections search pages. They will also be in the online library catalog and, due to CHF's membership in OCLC, available on WorldCat, an online union library catalog used by more and more researchers every day. PACHS is currently developing a one-click Google search interface that will also greatly aid scholars' discovery of collections at CHF. Expansion of the collections will be reflected in an increasing awareness of CHF's collections, a consequent growth in the number of fellowship applications, and a parallel growth in the number of fellowships awarded by CHF. This will be a great boon to the history of science and technology communities, especially with the vacuum left by the recent demise of the Dibner Institute of the History of Science at MIT.

CHF also plans to assess the impact of its collections on humanities research through a robust program of tracking past fellows and researchers and noting the publications that were produced as a result of working with the collections. CHF also tracks which collections items are used by researchers through the circulation module of the library's OPAC. Over time CHF expects to find which parts of the collections are being used more by researchers and use that information to target areas that would benefit from more focused growth through the collections endowment. The Library and Special Collections has just created a Collections Advisory Committee (of several experts from history of science and technology libraries, archives, and museums) that will meet on an annual basis, beginning in 2010, to advise on current practices and make suggestions for improvements.

### **Fundraising Plan**

CHF has conducted three successful major fundraising campaigns. The first was stimulated by a \$2 million challenge from Arnold Beckman: from 1987 to 1989, CHF raised \$6 million, creating its first

endowment fund. The second was prompted by a \$3.5 million challenge from Donald Othmer in 1995, and it raised over \$9 million. The third was CHF's 25<sup>th</sup> Anniversary Initiative, a comprehensive campaign that was launched in July 2005 and ended in June 2008. It raised \$75 million: 68% from individuals (including over \$5 million from CHF's Board of Directors); 16% from corporate sources; and 15% from foundations. The funds raised were directed as followed: 22% toward the construction of CHF's museum and conference center; 27% toward programming; and 50% toward endowment for programs, educational outreach activities, and public events.

Central to CHF's success in these campaigns and in its fundraising efforts in general has been the support of individuals who have pioneered or whose families have pioneered the commercialization of innovations based on chemistry and related sciences and technologies. These innovations have been applied in such diverse industries as pharmaceuticals, electronics, specialty chemicals, petrochemicals, and scientific instrumentation. Every year, CHF attracts new constituents with such backgrounds, while retaining the steadfast support of those who have generously given over the years. It is this pool of constituents that CHF will concentrate on in its effort to meet an NEH Challenge Grant. Preliminary conversations with some of these key supporters about the collections and the possibility of a NEH Challenge Grant have made CHF confident of its future success to match a \$600,000 NEH grant at a 3:1 ratio. For example, one potential donor is a member of CHF's Development Committee. This individual's father was a chemical engineer who had highly successful careers in both academia and industry; he became engaged with CHF in the last decades of his life. CHF anticipates a minimum six-figure gift from this prospect. Another potential donor with whom CHF discussed the important needs of its collections is a retired chemist who made important contributions to the understanding of electronic transitions during a successful career at a major chemical company. This prospect is also expected to make a sizable gift. Ultimately, CHF anticipates success in raising the required funds from approximately 100 donors with individual gifts of \$5,000 or more. Specifically, it looks to raise \$1.5 million from members of its governance (Board of Directors, Board of Overseers, and Heritage Council), and an additional \$300,000 from individual donors who are not part of governance but who have demonstrated a strong interest in

CHF's collections. The campaign to raise matching funds has already begun and will conclude on 30 June 2013.

CHF has brought together a strong, experienced team of frontline fundraisers to spearhead its effort to match the NEH Challenge Grant. This team consists of four individuals (Denise Creedon, Rick Sherman, Kara Mitzel, and Richard Ulrych) whose collective experience covers all aspects of development work.

As Vice President for Institutional Advancement, Denise Creedon leads the team. She joined CHF in May 2009, bringing with her extensive experience and success as a development executive. Prior to joining CHF she had been Co-Director of a comprehensive campaign and Director of Major Gifts at WHYY in Philadelphia, where she managed four development officers and four support staff, and where she succeeded in raising annual giving revenue from \$2 million to \$11 million in four years.

Rick Sherman is Director of Advancement. He joined CHF in January 2004 and helped direct CHF's successful 25<sup>th</sup> Anniversary Initiative. In this role he solicited and closed numerous major gifts for programs and capital projects (naming opportunities). Working closely with CHF's president and campaign volunteers, he raised funds from corporate, foundation, and individual donors—9,200 gifts from over 3,000 unique donors, including 100% involvement of the Board of Directors. He also planned and executed dozens of campaign events in numerous locations across the country to educate prospects and donors.

Kara Mitzel is Director of Development and another key component of the frontline fundraising group. She also participated in CHF's successful 25<sup>th</sup> Anniversary Initiative and brings a decade of experience in development, working in almost all aspects of fundraising: corporate and foundation relations, major giving, planned giving, and annual fund. She has secured grants from foundations of up to \$1 million and individual gifts of over \$100,000.

Richard Ulrych joined CHF in May 2007 and currently is Manager of Project Development. He previously served as Director of Foundation and Government Relations and Prospect Research at Harcum

College. He has secured several foundation and federal grants in excess of \$500,000 and individual gifts of \$25,000.

Besides these members of CHF's development staff, important fundraising roles will be played by CHF's President and CEO, Thomas R. Tritton, and CHF's Chancellor and Founding President, Arnold Thackray. Tritton participated in several successful campaigns as president of Haverford College from 1997 to 2007. He has also played important fundraising roles as a board member of the Fox Chase Cancer Center and Ohio Wesleyan University. Thackray served as CHF's chief fundraiser from its inception in 1982 until his retirement in 2007. He has secured numerous gifts in excess of \$1 million, including the Othmer bequest of \$135 million in 1997, which became the basis for much of CHF's current endowment, and the Moore gift of \$10 million, which made possible the purchase of the Roy G. Neville Historical Chemical Library.

#### **Previous NEH Grants**

CHF has received important support from NEH in the past. In 2001, CHF received a grant in the amount of \$4,625 to support a conservation needs assessment of prints that were received from the Fisher Collection (these depicted chemical scenes or portraits of scientists and dated from the 18<sup>th</sup> through the 19<sup>th</sup> centuries). In 2003, CHF received a second grant in the amount of \$4,265 for a conservation needs assessment of our photograph collection. Both grants greatly helped prioritize CHF's conservation needs and assisted CHF in best using its funds for conservation.

A large planning grant of \$39,663 from NEH in 2007 supported CHF's efforts to organize a multi-city exhibit of its alchemical paintings. Though the multi-city tour of CHF's artworks never took place, the grant helped CHF to gain a better understanding of its art collection, which greatly informed a current exhibit at CHF (*Marvels and Ciphers*).

The Pennsylvania Humanities Council has also made grants to CHF. In 2003, a \$2,200 grant was made to support a public lecture at CHF titled "Harry Potter, Nicolas Flamel, and the Philosopher's Stone." The lecture was given by Lawrence M. Principe, Professor of Chemistry and History of Science

at Johns Hopkins University and a leading historian of alchemy who has drawn heavily on our collections. This lecture was one of CHF's first forays into humanities public programming. Its success in delighting the audience encouraged CHF to pursue other outreach efforts, which today are a prominent feature of CHF. An example of this is a recent lecture by Richard Holmes called "Romantic Science," which explored the great attraction of science for Romantic authors such as Coleridge, Wordsworth, Shelley, and Keats.

In December 2009, CHF received a Pennsylvania Humanities Council grant for \$10,053 to support a film series featuring a mix of rare, vintage educational films about science and classic science-fiction features that touch on the themes explored by *Marvels and Ciphers*. To contextualize these screenings for the audience, humanities experts lead follow-up discussions that give attendees a greater understanding of historic views on science and shed light on public reaction to contemporary scientific debate and discovery.

## **Conclusion**

Understanding the material world has shaped the framework of human civilization. Dramatic progress in this understanding, beginning in the late 19<sup>th</sup> century and accelerating through the 20<sup>th</sup> century, has led to dramatic advances in housing, communications, agriculture, medicine, transportation, etc.—advances that define the modern world.

The United States has been the focal point of this progress—the center of research and innovation in chemistry and related sciences, technologies, and industries. It is fitting, therefore, that the world research center for the history of these fields has emerged in the United States. It is all the more fitting that CHF is located in Philadelphia, the birthplace of the nation and of the American chemical industry.

CHF has undergone remarkable growth and development since its inception in 1982, evolving from an organization with no endowment, no facilities, and no collections into one with a \$130 million endowment, a 100,000 ft<sup>2</sup> building, and significant collections of art, artifacts, archives, oral histories, rare books, and other printed materials. CHF now seeks to take the next step in its maturation. It seeks to

establish an endowment that will enable it to systematically fill the gaps in its collections through acquisition while addressing important preservation needs revealed by conservation assessments. The NEH Challenge Grant will make this possible by mobilizing CHF's donor base and establishing a collections endowment of \$2.4 million.

With such a collections endowment, in the next decade CHF will become a research library with collections that more comprehensively bring together reflections on the evolution of human understanding of the material world, from the time of the ancients to the present. It will become the logical repository for the papers of those advancing innovation and its commercialization; it will become the place where science-based industries look to safeguard and create access to their records; and it will be an even more powerful magnet for those looking to do research in the history of chemistry and related sciences and technologies. This, in turn, will further energize CHF's already robust fellowship program by attracting financial support for new fellowships, which will expand understanding of how advances in science and technology shape our world and our thinking. CHF urges NEH to make this possible through a Challenge Grant in the amount of \$600,000.