**ANNUAL FACULTY REPORT**

Summary Page

*(Fill out subsequent pages first and return to summary page.*

*Reporting period is May 1, 2014 through April 30, 2015, except for research publications)*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **NAME:** | Christopher E. Wilmer | | | |
| **RANK:** | Assistant Professor | | **YRS IN RANK:** | 1 |
| **DEPARTMENT:** | Chemical & Petroleum Engineering | | | |
| |  |  |  | | --- | --- | --- | | TEACHING - Courses | | | | Course Number | Enroll. | Eval. | | CHE 1097  CHE 3980  CHE 3990 | 1  2  2 | na  na  na | | TEACHING - Student Mentoring | | | |  | Acad. Year | Cum. | | MS in progress | 0 |  | | MS completed | 0 | 0 | | PhDs in progress | 2 |  | | PhDs completed | 0 | 0 | | MS Committees | 0 | 0 | | PhD committees | 0 | 0 | | TEACHING - Other Contributions | | | | Mentored 1 post-doctoral fellow, 2 PhD students, 1 undergraduate researcher and 1 undergraduate entrepreneur team. | | | | **Service/Leadership** | | | | Internal Leadership: | | | | Led major initiative within  department, school, or university | | 0 | | Developed new academic or research thrust | | 0 | | Created new certificate, minor or other academic program | | 0 | | Led multi-investigator proposals (research and education) | | 0 | | Created a new department/school/initiative | | 0 | | Developed an innovative course (i.e. honors level or across school or university) | | 0 | | Mentored junior faculty | | 0 | | Chaired committee in department, school or university | | 0 | | Developed and taught a MOOC or comparable course | | 0 | |  | |  | | Awards and Honors Received: | | 0 | | Community Service Activities: | | 0 | | | |  |  |  |  |  | | --- | --- | --- | --- | --- | | RESEARCH - Number of Publications (Calendar Year 2014) | | | | | | Books | | 0 | | | | Journals | | 5 | | | | Book Chapters | | 1 | | | | Conf. Proc. (refereed) | | 0 | | | | Conf Proc. (unrefereed) | | 0 | | | | Other refereed pubs | | 0 | | | | Other unrefereed pubs | | 0 | | | | Patent Applications | | 0 | | | | Patents Awarded | | 1 | | | | Research Grants (5-1-14 through 4-30-15) | | | | | | Research Expenditures | | | | | | PI: |  | $0 | | | | Co-PI: |  | $0 | | | | Proposals Written (# and $)(5-1-14 through 4-30-15) | | | | | | PI: | 3 | $450,000 | | | | Co-PI: | 3 | $600,000 | | | | Research - Other Contributions | | | | | | External Leadership: | | |  | | Appointed as editor/founding editor of established journal | | | 0 | | Appointed as associate editor or on editorial board of established journal | | | 0 | | Chaired professional committees | | | 0 | | Served on professional committees | | | 0 | | Elected to officer position in professional society | | | 0 | | Conference founder, organizer or chair of a major regional and/or national conference | | | 0 | | Elected as fellow by one’s primary professional society | | | 0 | | Participated in substantial leadership training | | | 0 | | | | |

**ANNUAL FACULTY REPORT**

(May 1, 2014 through April 30, 2015)

**TEACHING**

*Courses and Evaluation*

List all courses taught (including enrollment) with the average student evaluation score from line 2.7 on the OMET form or submit a summary of course evaluations if you have used a different form. If you believe that your evaluations on line 2.7 do not reflect the quality of your teaching please explain and provide supporting materials. (May 1, 2014 - April 30, 2015).

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| --- | --- | --- | --- | --- |
| **Course Number** | **Course Name** | **Enrollment** | **Term** | **Evaluation Score** |
| CHE 1097 | SPECIAL PROJECT | 1 | Spring | NA |
| CHE 3980 | PHD RESEARCH METHODOLOGY | 2 | Spring | NA |
| CHE 3990 | ADVANCED GRADUATE PROJECTS | 2 | Spring | NA |
|  |  |  |  |  |

*Mentoring*

List all students with whom you have interacted outside the classroom by the following categories: Doctoral Dissertation - primary advisor; Doctoral Dissertation - committee member; M.S - Committee; Sponsored Research; Unsponsored Research; undergraduates supported on research; visiting faculty; and post-doctoral fellows hosted. Note whether the student has completed or a date of expected graduation.

1. Doctoral Dissertation - Primary Advisor:  
   **Alec Kaija, Jenna Gustafson**
2. Doctoral Dissertation - Committee Member:
3. Students supported on sponsored research:
4. Students supported on unsponsored research:  
   **Natalie Isenberg (undergraduate)**
5. Undergraduates supported on sponsored research:
6. Visiting Faculty hosted:
7. Post-doctoral Fellows hosted:  
   **Hasan Babaei**

*Other activities and accomplishments in engineering education and teaching.*

**Mentored an undergraduate team for the Randall Big Idea competition.**

**RESEARCH**

List all publications that appeared during the last calendar year by categories: journals designated by department, journals, Books and Book Chapters, refereed proceedings, unrefereed proceedings, other publications, and articles accepted, but not published (January 1, 2014 – December 31, 2014).

1. Journals Designated by Department:
2. Journals:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| |  |  |  | | --- | --- | --- | |  | |  | | --- | | Kennedy RD, Clingerman DJ, Morris WJ, Wilmer CE, Sarjeant AAN, Stern CL, O'Keeffe MA, Snurr RQ, Hupp JT, Farha OK, Mirkin CA, Metallacarborane-based metal-organic framework with a complex topology. **Crystal Growth and Design**., March 5, 2014, 14(3), pp. 1324-1330 | | |  |  | |
| |  |  |  | | --- | --- | --- | |  | |  | | --- | | Colón YJ, Fairén-Jiménez D, Wilmer CE, Snurr RQ, High-throughput screening of porous crystalline materials for hydrogen storage capacity near room temperature. **Journal of Physical Chemistry C**., March 13, 2014, 118(10), pp. 5383-5389 | | |  |  | |
| |  |  |  | | --- | --- | --- | |  | |  | | --- | | Bae Y, Liu J, Wilmer CE, Sun H, Dickey AN, Kim M, Benin AI, Willis RR, Barpaga D, LeVan MD, Snurr RQ, The effect of pyridine modification of Ni-DOBDC on CO2 capture under humid conditions. **Chemical Communications**., March 28, 2014, 50(25), pp. 3296-3298 | | |  |  | |
| |  |  |  | | --- | --- | --- | |  | |  | | --- | | Karagiaridi O, Bury W, Fairén-Jiménez D, Wilmer CE, Sarjeant AAN, Hupp JT, Farha OK, Enhanced gas sorption properties and unique behavior toward liquid water in a pillared-paddlewheel metal-organic framework transmetalated with Ni(II). **Inorganic Chemistry**., October 6, 2014, 53(19), pp. 10432-10436 | | |  |  | |
| |  |  |  | | --- | --- | --- | |  | |  | | --- | | Gómez-Gualdrón DA, Wilmer CE, Farha OK, Hupp JT, Snurr RQ, Exploring the limits of methane storage and delivery in nanoporous materials. **Journal of Physical Chemistry C**., April 3, 2014, 118(13), pp. 6941-6951 | | |  |  | |

1. Books:
2. Book Chapters:

Wilmer CE, Snurr RQ, Large-scale generation and screening of hypothetical metal-organic frameworks for applications in gas storage and separations, **Prediction and Calculation of Crystal Structures - Springer International Publishing**, January 1, 2014, pp. 257-289

1. Refereed Proceedings:
2. Unrefereed Proceedings:
3. Other Publications:
4. Articles accepted but not published:

List all invention disclosures submitted during the last calendar year by title and invention disclosure number; list all patent applications filed (name, filing date, application number); list patents awarded by either US Patent Office or a foreign patent office -- patent number, title, date issued (January 1, 2014 - December 31, 2014).

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| --- | --- | --- | --- | --- |
| Title of Invention | | | Disclosure Number | |
|  | | |  | |
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| Patent Applications Filed | | | | |
| Name | Filing Date | | Application Number |  |
|  |  | |  |  |
|  | | | | |
|  | | | | |
| Patent Applications Awarded | | | | |
| Name | | Filing Date | Application Number | US or Foreign |
| SYSTEM AND METHOD FOR GENERATING AND/OR SCREENING POTENTIAL METAL-ORGANIC FRAMEWORKS | | July, 6, 2012 | 13/543,283  Patent #: 8,900,352 B2 | US |

List of all formally invited presentations (Keynote, Plenary Lectures, and Seminars) given at conferences or other universities (May 1, 2014 through April 30, 2015).

C.E. Wilmer (invited), “New high throughput materials discovery algorithms   
for highly porous materials: Applications to energy storage, carbon capture, and gas separations,” National Energy Technology Laboratory, Pittsburgh, PA, (Jan. 2015).

C.E. Wilmer (invited), “Efficient gas storage and separations,” GoogleX Solve-for-X, Mountainview, CA, (Feb. 2014).

List of all other presentations given (May 1, 2014 through April 30, 2015).

C.E. Wilmer, “The Need for New Tools to Explore Hypothetical Molecular Systems,” AIChE 2014 Annual Meeting, Atlanta, GA, (Nov. 2014).

Please identify all research projects funded by NSF or NIH that have had expenditures including amount awarded, number of years funded and role (May 1, 2014 through April 30, 2015).

|  |  |
| --- | --- |
| Grant Name |  |
| Agency |  |
| Amount Awarded |  |
| # of Years Funded |  |
| Role (PI or Co-PI) |  |
|  |  |
| Grant Name |  |
| Agency |  |
| Amount Awarded |  |
| # of Years Funded |  |
| Role (PI or Co-PI) |  |
|  |  |
| Grant Name |  |
| Agency |  |
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| # of Years Funded |  |
| Role (PI or Co-PI) |  |
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| # of Years Funded |  |
| Role (PI or Co-PI) |  |
|  |  |
| Grant Name |  |
| Agency |  |
| Amount Awarded |  |
| # of Years Funded |  |
| Role (PI or Co-PI) |  |

List of all other research projects that have had expenditures from May through April including amount awarded, number of years funded, funding agency and role. Indicate if the award was peer reviewed (May 1, 2014 through April 30, 2015).

|  |  |
| --- | --- |
| Grant Name |  |
| Agency |  |
| Amount Awarded |  |
| # of Years Funded |  |
| Role (PI or Co-PI) |  |
| Peer Reviewed? |  |

List all research proposals and your role from May through April. Include their current status. Indicate if proposal was/will be peer reviewed. Please indicate interdisciplinary proposals with an asterisk (May 1, 2014 through April 30, 2015).

ACS Petroleum Research Fund – Doctoral New Investigator Grant ($150,000)  
Submitted: Oct. 17th, 2014 as the sole principal investigator  
Status: Rejected

ACS Petroleum Research Fund – Doctoral New Investigator Grant ($150,000)   
Submitted: Mar. 15th, 2015 as the sole principal investigator  
Status: Pending, will be peer reviewed

Kaufman Foundation New Investigator Research Grant ($150,000)  
Submitted: Jan. 29th, 2015 as the sole principal investigator  
Status: Letter of intent rejected

Department of Energy Computational Materials Sciences DE-FOA-0001276 ($150,000? est.)  
Submitted: Feb. 19th, 2015 as a co-principal investigator (with 8 other PIs)  
Status: Letter of intent submitted, advised not to submit full proposal

ARPA-E OPEN DE-FOA-0001261 ($225,000? est.)  
Submitted: Feb. 19th, 2015, as a co-principal investigator (with 3 other PIs)  
Status: Letter of intent rejected

ARPA-E OPEN DE-FOA-0001261 ($225,000? est.)  
Submitted: Feb. 19th, 2015, as a co-principal investigator (with 4 other PIs)  
Status: Letter of intent rejected

List other research activities and accomplishments (May 1, 2014 through April 30, 2015).

Formed an NETL partnership with Dr. Janice Steckel. Will split a postdoctoral fellow with her research group (paid for by NETL) that will be hired in the coming year.

**SERVICE/LEADERSHIP** (May 1, 2014 through April 30, 2015)

Internal Leadership Activities (weights as recommended by SSOE Leadership Committee)

* List all major initiatives that you led within the department, school or university (up to 100):
* List all new academic or research thrusts that you developed (up to 75):
* List all new certificates, minors or academic programs that you created (60):
* List all multi-investigator proposals that you led (research and education) (25/40\*):
* List all **new** department, school or university initiatives that you created (75):

* List all innovative courses (possibly at the honors level or reaching across departments in the school or units within the university) that you developed (25):
* List all junior faculty you have mentored (25\*\*):
* List all department, school or university-wide committees you have chaired (25):
* List all MOOCs or comparable courses you have developed and taught (40):

External Leadership Activities (weights as recommended by SSOE Leadership Committee):

* List all appointments as an editor/founding editor of an established journal -- list journal (up to 40):
* List all appointments as an associate editor or on editorial board of an established journal -- list journal (up to 20):
* List all professional committees which you chaired (25):
* List all professional committees on which you served (10):
* List all elected officer positions in a professional society (35):
* List all conferences (major regional and/or national conference) for which you served as founder, organizer, or chair (65):
* List election as a Fellow by your primary professional society (25):
* List substantial leadership training in which you have participated (20):

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\*25 for submission/45 for award

\*\*based on query of junior faculty as to who had the biggest professional academic impact

Note: The contribution to leadership will be evaluated by your department chair and will contribute toward your contribution to service with internal leadership activities being given twice the weight as external activities.

List awards and honors received:

List community service activities:

Mentored undergraduate student teams for the Randall Big Idea Competition

Participated in faculty “innovator” meetings organized by Babs Carrier, meant to help spur innovation and entrepreneurship across the university

**DIVERSITY** (May 1, 2014 through April 30, 2015)

List any involvement (research, co-authoring a paper, thesis/dissertation supervision, etc.) in mentoring women and minority students at graduate and undergraduate levels

Natalie Isenberg was an undergraduate who did research in my lab (in the 2015 Spring semester)  
Jenna Gustafson is a graduate student for whom I am her PhD advisor

List activities or evidence of integration of diversity into curriculum (through team projects, class assignments, pedagogies/learning styles, support services, course selection, etc.):

List any participation in diversity initiatives such as:

1. Summer internships for women and minority students:
2. Pre-college hands-on-science or pre-college activities (include the number of students involved) to attract/recruit quality women and minority students to engineering:
3. The Swanson School of Engineering and other diversity activities related on-campus workshops/seminars:
4. Diversity related off-campus conferences:
5. Innovative activities or grants to improve diversity in the School:
6. Women and minority faculty speakers:

Invited a seminar speaker, Prof. Rachel Getman, who is a woman.

1. Search committee participation:

**PAST GOALS**

What were your goals for last year?

As this was my first year both at the University, and city, of Pittsburgh, my primary goals were to get my research group started as quickly as possible and to firmly plant roots in the area (e.g., buy a home that can support a large family, connect with local financial/legal/medical professionals). The latter goal was meant to assist in supporting my career at Pitt for the long term (for example, to avoid needing to move a second time in case my family expands).

A secondary goal was to submit more than dozen research proposals, based on a list of project ideas I had put together while finishing my postdoctoral fellowship at Harvard.

Were these goals realized?

My first graduate student, Alec Kaija, started doing research immediately in my lab in the summer before I official joined as faculty. By the time I got a key to my office, he was already producing publishable data and could train newer graduate students. A postdoc who applied to work with me **two years** prior to my joining Pitt, Hasan Babaei, was ready to start in August 2014 and has already completed his first manuscript. My second graduate student, Jenna Gustafson, joined in January 2015, is working on developing an artificial nose device and will present her early research findings at AIChE in the fall this year. A third graduate student from Turkey is already committed to begin doing research in the fall of 2015. The high research productivity of my first three lab members indicates the first of my primary goals (getting my research group started as quickly as possible) was met.

My family found and bought a five bedroom house in Fox Chapel that has a flat driveway and a first floor bedroom (i.e., it is retirement friendly), meaning that we will not have moving anxiety for the foreseeable duration of our careers at Pitt. We hired/retained a local lawyer, tax accountant, financial advisor, nanny, landscaper, and cleaner, among others, to help us focus on our careers going forward (at the expense of time invested searching for everyone in our first year).

The secondary goal of submitting more than dozen research proposals was **not** realized. I failed to allot enough time to proposal writing, at least partly due to being a first time father (our first child was 3 months old when moved to Pittsburgh, and my wife works full time at Pitt). It was very important to me to submit a large number of research proposals in my first year, and so this will be my **top** priority for the second year (and subsequent years until my research group is fully funded).

**YOUR EXPECTATIONS**

What are your goals for the next academic year?

My primary goals for the next academic year are to submit more than a dozen research proposals, and to submit at least four papers from my group for publication.

My secondary goal is to develop closer relationships with faculty in the Chemistry and Computer Science departments, working towards possible cross/courtesy appointments.

I also expect to complete the hiring process of a full-time software developer, working with the Center for Simulation and Modeling.

What resources will you need to achieve these goals?

Helpful introductions to computer science faculty might be helpful.