

Ceramic Subcommittee
March 19, 2014
ICDD Headquarters
Peter Zavalij, Chairman

Call to Order

Meeting was called to order at 1:00 p.m. by P. Zavalij.

Appointment of Minutes Secretary

Emily Foster

Approval of Minutes from March 2013 Meeting

Moved by J. Faber.

Seconded by M. Rodriguez.

Minutes were unanimously approved.

12 For

0 Opposed

0 Abstained

Board of Directors' Liaison Report

W. Wong-Ng reported the two motions from last year were approved. One was to allocate money for the Annual March 2014 meeting. The second motion was to remove the "superconductor" flag for entries without a T_c .

As a general comment, it was noted that there is no current definition of microwave materials, or an active editor. It has been requested that a task group be assigned by the subcommittee to work on the definition.

Old Business

Development of subfiles – P. Zavalij

Details were reviewed for development of property subfiles:

1. Subfile Initiation Prerequisites: Important properties, a strict/exact definition, and an assigned task group of experts.
2. Adding a Subfile to the PDF: The subfile must be well populated, with primary entries and links to alternate entries.
3. Subfile Maintenance & Population: Review of existing entries and annual review of new database entries.
4. Scheme of Adding New Entries:
 - a. Mark candidates from list (full list may be filtered by general selection criteria).
 - b. Review marked entries with all data.
 - c. Add properties, comments and links to the database.

Superconductors (E. Antipov)

1. Set 64 was reviewed and six patterns were removed.
2. From the automatic assignment, five were correct and 23 were removed. .
A discussion took place on removing the Superconductor flag when there is no T_c present and a motion was discussed (see **MOTION 2** below).

Thermoelectrics (W. Wong-Ng)

1. Set 64 was reviewed and 43 patterns were marked.
 - a. 17 were automatic entries, all of which were correct.
 - b. Property data is still in progress.
2. For Set 61, Xian-Li Su is willing to assign property data lists to 30 patterns per year.
3. So far, 120 property data sheets have been assigned.
4. Microwave materials have not been worked on.
It has been suggested to find a student to work on it, so it gets more time dedicated to it in the coming year.

Semiconductors (M. Delgado/A. Davydov)

1. Set 64 was reviewed and 40 patterns were marked (12 by Davydov and 28 by Delgado).
 - a. There were 15 new compounds.
 - b. Four compounds should have been assigned to **Ceramics** subfile.
2. A goal was set to actively acquire physical property sheets for semiconductors.
A student may be assigned, with review by Delgado and Davydov.
3. 40 temperature phase diagrams, based on pressure were added this year.
4. **Materials Genome Initiative (MGI)**-deployment of new materials to the market.
 - a. **MGI** uses a black-box approach to bring new materials to the market. An essential component of the black box is data.
 - b. It has been suggested that the ICDD collaborate with **MGI** (ICDD provides data, **MGI** provides materials).
 - c. May be used to create a **MGI** subfile.

Metal Hydride Electrodes (I. Zavalij)

1. **Hydrogen storage material** (intermetallic compounds) subfile.
 - a. To include Pressure-Concentration-Temperature diagrams.
 - b. Includes **Metal-Hydrides Electrode** subclass with electrochemical cycling and capacity plots.
Part of the **Battery Materials** subfile.
2. Set 64 was reviewed and 48 patterns were marked (HSM).
3. A group in Ukraine is working on the property data sheets, completing 30-40 per year.
30 property data sheets were added last year by the group.

Ionic Conductors (V. Nalbandyan/G. Subba Rao)

1. Set 64 was reviewed and 11 entries were marked.
2. Seven entries were marked correctly, and four marked incorrectly.

Ferroelectrics (S. Ivanov/V. Nalbandyan)

1. Set 64 was reviewed, and 50 patterns were marked.
2. No property entries yet, but people are interested.

Cements (B. Scheetz)

No property entries.

Battery Materials (P. Zavalij/E. Pomarantseva)

1. Set 64 was reviewed and seven new patterns were marked (11 were automatic).
2. Contains property sheets for 37 cathode materials.

Other Subfiles

1. Proposed subfiles include:
 - a. Piezoelectrics
 - b. Multiferroics
 - c. Giant Magneto-resistant materials
2. Existing
Bioceramics
3. Currently, these subfiles have not been worked on. Experts are needed to oversee these subfiles.

Perovskites

1. L. Vasylechko has started work on perovskite properties.
2. Set 64 was reviewed and 157 patterns were marked.
3. ~30 property sheets added per year.
4. Submitting experimental patterns.
5. Existing patterns must be reviewed and organized.

Motions

MOTION 1

The Ceramic Subcommittee recommends to the Technical Committee that a sum of up to \$3,000 be allocated for a meeting of Ceramics task group members during 2014 Denver X-ray Conference and 2015 ICDD Annual meeting to work on property subfiles with following activity report.

Moved by P. Zavalij.

Seconded by J. Kaduk.

10 (for)

0 (opposed)

0 (abstain)

Motion passed.

MOTION 2

The Ceramic Subcommittee recommends that the “Superconductor” flag be removed for entries without a transition temperature (T_c)

Moved by P. Zavalij.

Seconded by E. Antipov.

9 (for)

0 (opposed)

0 (abstain)

Motion passed.

Adjournment