# How do we present a *Peer Reviewed Journal Article* summary?

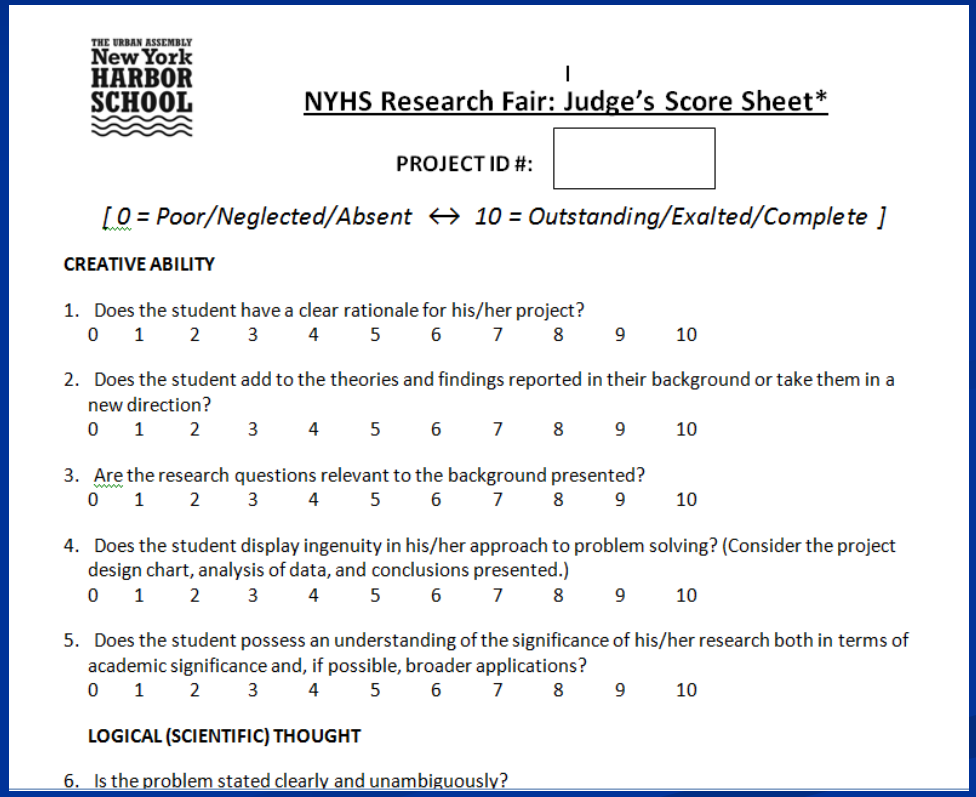
Mr. M. Gonzalez

# Objectives

- I can use a judging score sheet to evaluate a professional presentation.
- I can identify presentation methods.
- I can practice these methods in front of an audience and judges.

# Judging Score Sheet

- Components
  - Creative Ability
  - Logical Thought
  - Thoroughness
  - Presentation Skills
- Take 5 minutes to read questions.



THE URBAN ASSEMBLY New York HARBOR SCHOOL

**NYHS Research Fair: Judge's Score Sheet***

**PROJECT ID #:**

*[ 0 = Poor/Neglected/Absent ↔ 10 = Outstanding/Exalted/Complete ]*

**CREATIVE ABILITY**

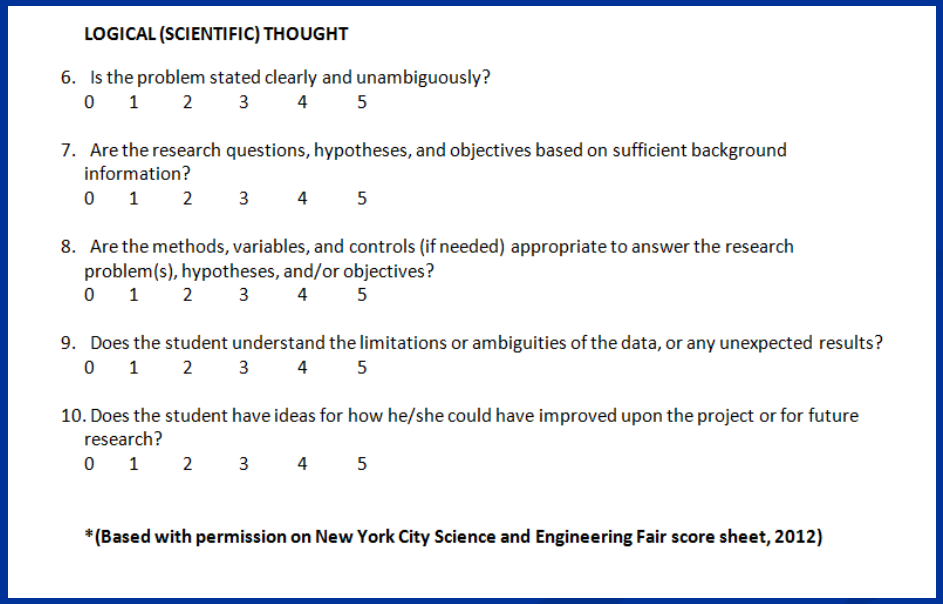
1. Does the student have a clear rationale for his/her project?
   0 1 2 3 4 5 6 7 8 9 10
2. Does the student add to the theories and findings reported in their background or take them in a new direction?
   0 1 2 3 4 5 6 7 8 9 10
3. Are the research questions relevant to the background presented?
   0 1 2 3 4 5 6 7 8 9 10
4. Does the student display ingenuity in his/her approach to problem solving? (Consider the project design chart, analysis of data, and conclusions presented.)
   0 1 2 3 4 5 6 7 8 9 10
5. Does the student possess an understanding of the significance of his/her research both in terms of academic significance and, if possible, broader applications?
   0 1 2 3 4 5 6 7 8 9 10

**LOGICAL (SCIENTIFIC) THOUGHT**

6. Is the problem stated clearly and unambiguously?

# Judging Score Sheet

- Directions
  - Add project ID to the top (for today, just add the presenters name)
  - When judging, circle appropriate quantity,
  - 10 is best,



**LOGICAL (SCIENTIFIC) THOUGHT**

6. Is the problem stated clearly and unambiguously?
   0 1 2 3 4 5

7. Are the research questions, hypotheses, and objectives based on sufficient background information?
   0 1 2 3 4 5

8. Are the methods, variables, and controls (if needed) appropriate to answer the research problem(s), hypotheses, and/or objectives?
   0 1 2 3 4 5

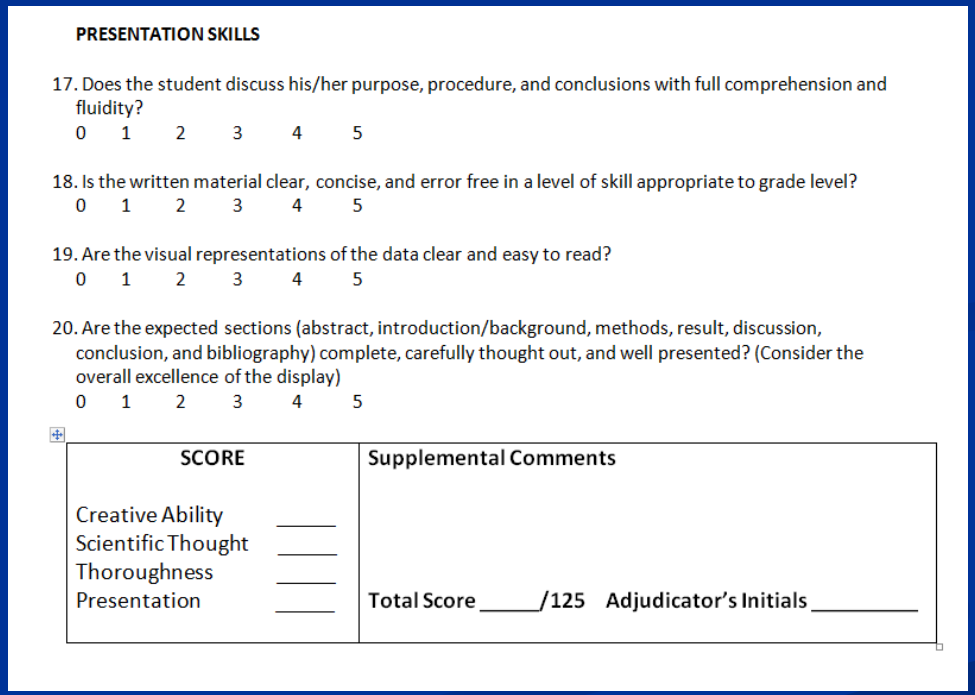
9. Does the student understand the limitations or ambiguities of the data, or any unexpected results?
   0 1 2 3 4 5

10. Does the student have ideas for how he/she could have improved upon the project or for future research?
    0 1 2 3 4 5

***(Based with permission on New York City Science and Engineering Fair score sheet, 2012)**

# Judging Score Sheet

- Directions
  - Tally score,
  - Add comments,
  - Print your name.



**PRESENTATION SKILLS**

17. Does the student discuss his/her purpose, procedure, and conclusions with full comprehension and fluidity?
    0 1 2 3 4 5

18. Is the written material clear, concise, and error free in a level of skill appropriate to grade level?
    0 1 2 3 4 5

19. Are the visual representations of the data clear and easy to read?
    0 1 2 3 4 5

20. Are the expected sections (abstract, introduction/background, methods, result, discussion, conclusion, and bibliography) complete, carefully thought out, and well presented? (Consider the overall excellence of the display)
    0 1 2 3 4 5

| SCORE | Supplemental Comments |
| --- | --- |
| Creative Ability _____ | |
| Scientific Thought _____ | |
| Thoroughness _____ | |
| Presentation _____ | **Total Score** _____**/125** **Adjudicator's Initials** _____ |

# Summary of: Achievement of 100% Removal of Oil from Feathers Employing Magnetic Particle Technology by Dao, *et al.* 2006

Presented by:

Mauricio Gonzalez

# Introduction

- Authors: H. Dao, L. Ngeh, S. Bigger, and J. Orbell
- Title: Achievement of 100% Removal of Oil from Feathers Employing Magnetic Particle Technology
- Journal of Environmental Engineering (May 2006) Vol. 132, No. 5, pp. 555-559

# Introduction

- Topic: Oil spills cause oil to penetrate marine birds' feathers and subsequently harm or kill them.
- Purpose: Removing oil efficiently and completely using a novel magnetic approach to mitigate environmental impact.
- Problem: Can using a higher grade of iron powder achieve 100% removal of oil from feathers?

# Review of Literature

- Removing oil with detergents, warm water, among others (IPIECA, 2004).
- Above method is highly refined (Basseres *et al.* 1994; Holcom and Russell 1999; Oiled Wildlife Care Network 1999; U.S. Fish and Wildlife Service 2002) with impressive results (Jessup 1998; Goldsworthy *et al.* 2000) but not 100%.


- International Petroleum Industry Environmental Conservation Association IPIECA. 2004. "A guide to oiled wildlife response planning." http://www.ipieca.org/downloads/oil_spill/oilspill_reports/English/Vol13_Oiled_Wildlife_1198.35KB.pdf July 12, 2005.
- Bassères, A., Verschuere, B., Jacques, J. P., Holtzinger, G., and Tramier, B. 1994. "A new cleaning product for oiled birds: Laboratory and metabolic tests and initial results of field tests." *Spill Sci. Technol. Bull*, 12, 159–164.
- Holcom, J., and Russell, M. 1999. "New breakthroughs in oiled bird rehabilitation." *J. Wild. Rehabil.*, 224, 6–8.
- Oiled Wildlife Care Network OWCN. 1999. *Protocols for the care of oiled affected birds*, Wildlife Health Center, University of California, Davis.
- U.S. Fish and Wildlife Service. 2002. *Best practices for migratory bird care during oil spill response*, U.S. Fish and Wildlife Service, Bethesda, Md.
- Jessup, D. A. 1998. "Rehabilitation of oiled wildlife." *Conser. Biol.*, 125, 1153–1155.
- Goldsworthy, S. D., Gales, R., Giese, M., Brothers, N., and Hamill, J. 2000. "Effects of the iron baron oil spill on little penguins Eudyptula minor. II. Post-release survival of rehabilitated oiled birds." *Wild. Res.*, 27, 573–582.

# Review of Literature

- Effectiveness of magnetic particle technology possibly better (Orbell *et al.* 1999, 2004).
- Using iron particles is nontoxic and nonirritating and superior equipment mobility (Ngeh, 2002).

http://2.bp.blogspot.com/_basraNod1Ms/TAD30EVbxrI/AAAAAAAABgo/5MSWevsgXyw/s1600/oil-spill.jpg

# Review of Literature

- Fine divided iron is almost ideal for the removal of a broad range of different oil types from feather clusters and plumage (Orbell *et. al.* 1999, 2004).
- Fine iron removes 99% of oil (Orbell *et al.* 2005)

# Hypothesis

- Ever finer grades of iron can be used to remove oil in excess of 97.4% from feathers.

# Materials

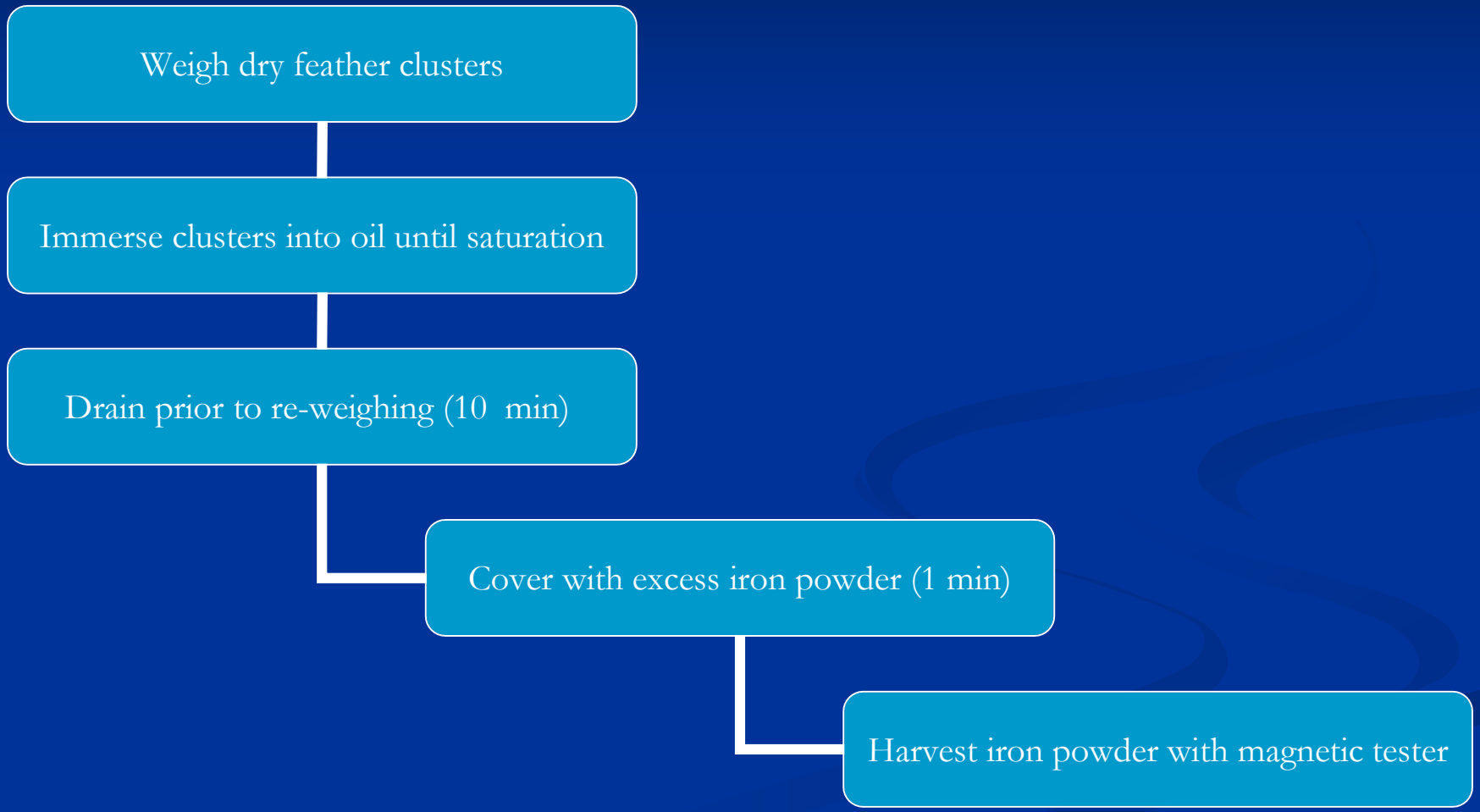
8 different grades of iron are obtained with known characteristics

3 different crude oils are used

Mallard duck feathers are used

Laboratory magnetic tester used to harvest the oil from feathers

# Methods


Weigh dry feather clusters
Immerse clusters into oil until saturation
Drain prior to re-weighing (10 min)
Cover with excess iron powder (1 min)
Harvest iron powder with magnetic tester

# Methods

Harvest iron powder with magnetic tester

Reweigh cluster

Repeat process until percentage removal achieves constant value

Plot percentage removal vs. number of treatments

# Results

**Table 4.** Percentage ($F\%$) of Oil Removed (Arab Medium Crude Oil, Gippsland Crude Oil, Merinie Crude Oil, Seawater/Emulsion) from Duck Feathers using Superfine/Spongy/Annealed Iron Powder, MH300-29, Grade 8

| | Oil removed ($F\%$) | | | |
|---|---|---|---|---|
| Number of treatments ($N$) | Arab Medium Crude oil | Gippsland Crude oil | Merinie Crude oil | Oil/seawater emulsion |
| 1 | 94.68 | 98.78 | 97.30 | 96.46 |
| 2 | 98.03 | 99.85 | 99.20 | 98.42 |
| 3 | 98.92 | 100.08 | 99.75 | 99.17 |
| 4 | 99.24 | 100.21 | 99.94 | 99.47 |
| 5 | 99.52 | 100.19 | 100.00 | 99.81 |
| 6 | 99.63 | 100.15 | 100.02 | 100.00 |
| 7 | 99.74 | 100.20 | 100.05 | 100.06 |
| 8 | 99.85 | | 100.05 | |
| 9 | 99.88 | | | |
| 95% confidence interval for final treatment | ±0.11 | ±0.15 | ±0.14 | ±0.13 |

# Results

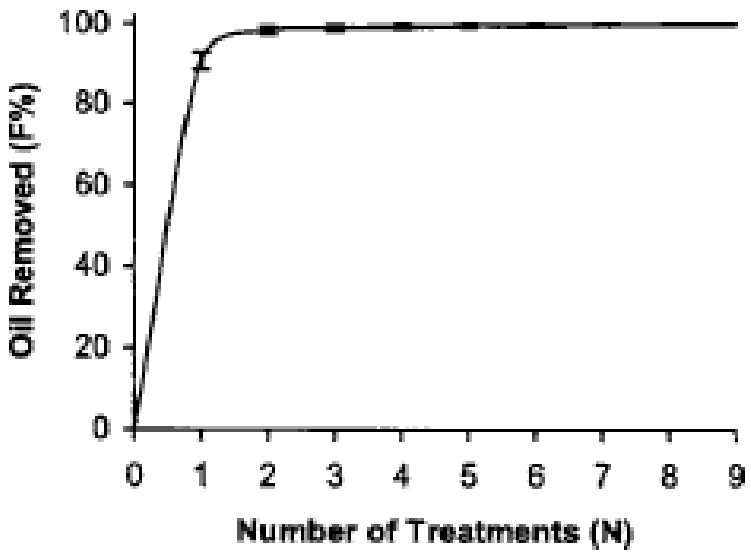



**Fig. 1.** Characteristic plot for the percentage by weight of oil removed ($F\%$) from duck breast feathers as a function of the number of treatments ($N$). The oil in this case is Arab Crude Oil and the magnetic particle grade is MH300-29 (superfine/spongy/annealed—Grade 8). Error bars represent 95% confidence intervals for five replicates.

# Results

**Table 3.** Percentage of Arab Medium Crude Oil Removed ($F\%$) from Duck Feathers using Nine Different Grades of Iron Powder

| | | Coarse grade | | Fine grade | | | | Superfine | |
|---|---|---|---|---|---|---|---|---|---|
| Number of treatments ($N$) | Original grade | A40S atomized unannealed | M40 spongy unannealed | A100S atomized unannealed | C100.29 spongy unannealed | ASC100.29 atomized annealed | NC100.24 spongy annealed | ASC300 atomized annealed | MH300-29 spongy annealed |
| | | | | | Oil removed ($F\%$) | | | | |
| 1 | 73.0 | 70.97 | 85.76 | 84.72 | 90.20 | 89.07 | 91.47 | 91.37 | 94.68 |
| 2 | 87.9 | 83.11 | 92.00 | 92.56 | 92.22 | 93.11 | 94.51 | 94.44 | 98.03 |
| 3 | 92.7 | 87.91 | 94.75 | 94.87 | 95.21 | 97.45 | 96.80 | 97.23 | 98.92 |
| 4 | 94.9 | 91.03 | 96.63 | 96.44 | 97.28 | 98.37 | 97.70 | 98.43 | 99.24 |
| 5 | 95.4 | 94.08 | 97.38 | 97.23 | 98.02 | 98.60 | 98.72 | 98.82 | 99.52 |
| 6 | 96.9 | 95.58 | 97.82 | 97.67 | 98.34 | 98.82 | 98.97 | 99.36 | 99.63 |
| 7 | 97.3 | 97.00 | 98.21 | 98.12 | 98.61 | 99.08 | 99.13 | 99.48 | 99.74 |
| 8 | 97.5 | 97.56 | 98.42 | 98.56 | 98.98 | 99.11 | 99.29 | 99.57 | 99.85 |
| 9 | 97.4 | 98.11 | 98.70 | 98.76 | 99.22 | 99.09 | 99.42 | 99.59 | 99.88 |
| 95% confidence interval for final treatment | ±0.8 | ±0.77 | ±0.30 | ±0.22 | ±0.22 | ±0.07 | ±0.17 | ±0.12 | ±0.11 |

# Results

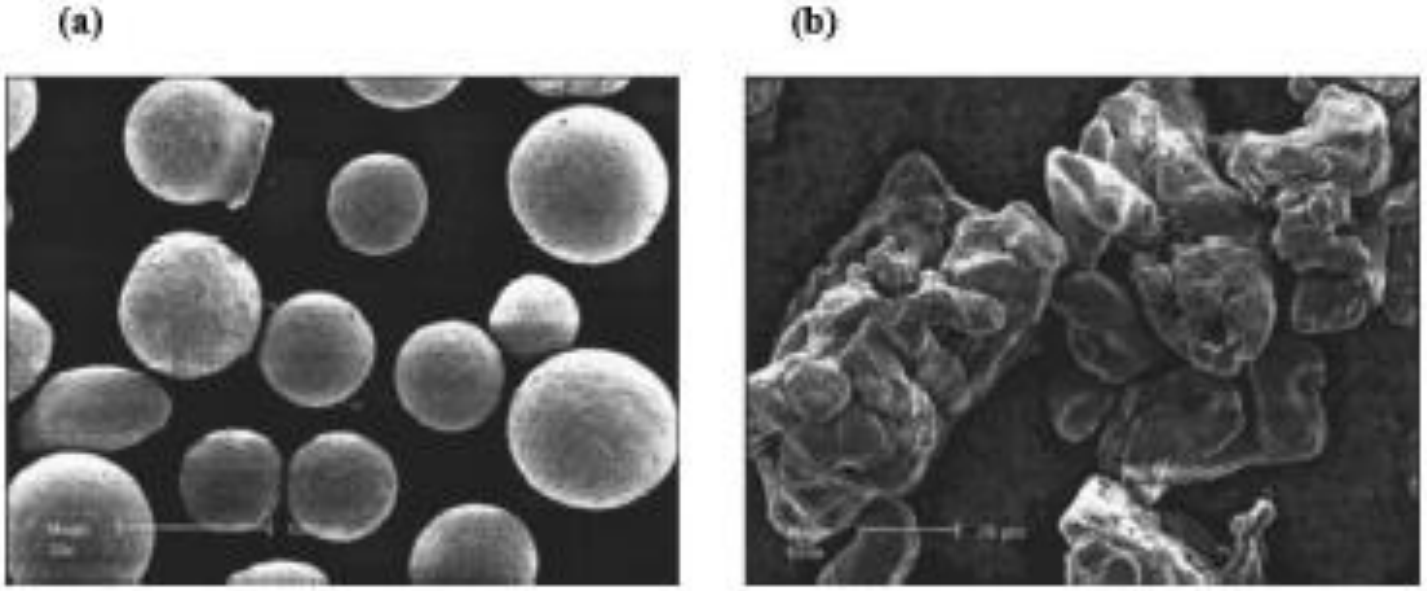



**Fig. 2.** (a) "Original" iron powder and (b) Grade 8 iron powder

# Discussion

- As seen from the data (Table 03) the pick-up of oil increases as the grade of iron becomes finer.
- Spongy iron  had better pick-ups that atomized.
- Therefore to optimize pick-up, it is desirable to consider size and texture as previously hypothesized.
- For all three spongy fine and superfine grades tested, the *final* pick-up ranged from 99.22 to 99.88% after nine treatments.

# Discussion

- Superfine/spongy grade iron is capable of removing about 100% of the contamination for all three oils.
- After only 3 treatments, 100% of Gippsland Crude oil and 98.92% of Arab Medium Crude was removed.
- Micrographs reveal that roughened surfaces and cavities in the iron allow for greater absorptions well as adsorption.

# Conclusions

- As hypothesized, the most effective iron powder tested was the superfine/spongy grade where effectively 100% removal has been achieved.
- Very high removal rates were achieved for all 3 oil types studied.
- Micrographs reveal that roughened surfaces and cavities in the iron allow for greater absorption as well as adsorption.

# Summary of: Achievement of 100% Removal of Oil from Feathers Employing Magnetic Particle Technology by Dao, *et al.* 2006

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