WIE First-year Student Retreat, 2005

Photo	What to Find	What Was Found, and Where It Was Found
Affix Photo Here	**Aluminum** Strong, light, and corrosion resistant, find an example that demonstrates all of the above, but mostly the latter. For extra credit, was it cast or wrought?	
Affix Photo Here	**Ceramic (Structural)** Nearly always under a compressive load. Find an example of a ceramic used where strength matters, but in an application where literally tons are used.	
Affix Photo Here	**Gold** Rare in nature, but not that difficult to find in the retail domain. To make this one a little more challenging, jewelry is off limits.	
Affix Photo Here	**Steel** Its practically everywhere, though often out of sight, or painted. Find a good example of the regular old cheap stuff.	
Affix Photo Here	**Ceramic (Electrical)** Look around (and above) and you'll find examples of ceramics used in electrical applications, from the very tiny to several kilogram parts.	
Affix Photo Here	**Ceramic (Transparent)** Examples of this one might be closer than the tip of your nose. Make sure you aren't taking a picture of something that is actually made of plastic	

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Affix Photo Here	**Brass** While widely used, most people don't even realize they have some in their pocket. Find an example of brass that you don't usually find in your pocket.	
Affix Photo Here	**Fiber Composite** High specific strength makes this type of material attractive to aerospace, sports, and other high-performance structural and some electrical applications.	
Affix Photo Here	**Plexiglass** Best known for being transparent, it is also much tougher than glass, but much less so that many other polymers.	
Affix Photo Here	**Ceramic (Ornamental)** Besides its structural and electrical applications, ceramics can be pretty. Find a good example of such a ceramic.	
Affix Photo Here	**Natural Composites** Plant, animal, or mineral. This one should be easy since rarely does nature produce pure materials. But wait a minute, can we call natural materials engineering materials?	
Affix Photo Here	**Copper** While it lacks the strength of the brasses and bronzes, it has excellent corrosion resistance and excellent thermal and electrical conductivity.	

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Affix Photo Here	**Nylon** One of the materials that started the plastics revolution, it is used in so many everyday items that it has practically become invisible.	
Affix Photo Here	**Cast Iron** Cheap, durable, and corrosion resistant, but too brittle to be forged or shaped after it is cast, this is the material that started the industrial revolution.	
Affix Photo Here	**Solder** This class of material provides an example of when a low melting point is desirable.	
Affix Photo Here	**Foam** Foams can be made of metal, ceramic, or polymers. They can be hard and brittle or soft and very deformable. Find an example of foam.	
Affix Photo Here	**Laminate Composite** Layered composite materials are used in things as ordinary as construction materials, to circuit boards, to the protective shrouds on aircraft engines.	
Affix Photo Here	**Chromium** This metal owes it shiny appearance to a thin, adherent layer of a very stable oxide. Add it to steel to make that steel “stainless”. Or, electroplate that steel to make it attractive and corrosion resistant.	

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Affix Photo Here	**Plastics – PVC** Polyvinylchloride is used indoors and out and comes in two basic colors. Find an example of schedule 80 (gray) or schedule 40 (white) PVC.	
Affix Photo Here	**Aggregate Composites** There is probably more of this class of material used that any other. How could you not come back with a picture of a good example of this?	
Affix Photo Here	**Stainless Steel** Add a little chromium, about 18%, to steel and it becomes stainless. Add a little nickel and it won't attract a magnet. Will your example attract a magnet?	
Affix Photo Here	**High Density Polyethylene (HDPE)** Think Nalgene, and many of the plastic bottles we use.	
Affix Photo Here	**Semiconductor** Not quite a conductor, not quite an insulator, and not usually exposed so you can get a picture of it, so find a device that employs a semiconductor.	
Affix Photo Here	**Nichrome** This nickel-chrome alloy is used in household appliances where things are heated. It boasts high electrical resistance and oxidation resistance.	