



POLYMORPH

TO ANSWER ALL THE QUESTIONS YOU WILL NEED TO DOWNLOAD THE SMART MATERIALS APP, FROM THE INTERACTIVE MOBILE APP SECTION OF www.technologystudent.com

LINK

(http://www.technologystudent.com/mobapps/smart_materials1.pdf)

Once you have downloaded the App, you can use it to navigate the website. You may need to follow the links on each page of the App, to research / complete answers to all the questions.

**ARE YOU READY?
USE THE MOBILE App!!**

1

WHAT IS POLYMORPH?

2

DESCRIBE HOW GRANULES OF POLYMORPH ARE PREPARED READY FOR USE

3

SKETCH THE PROCESS REGARDING USING POLYMORPH WITH A MOULD.

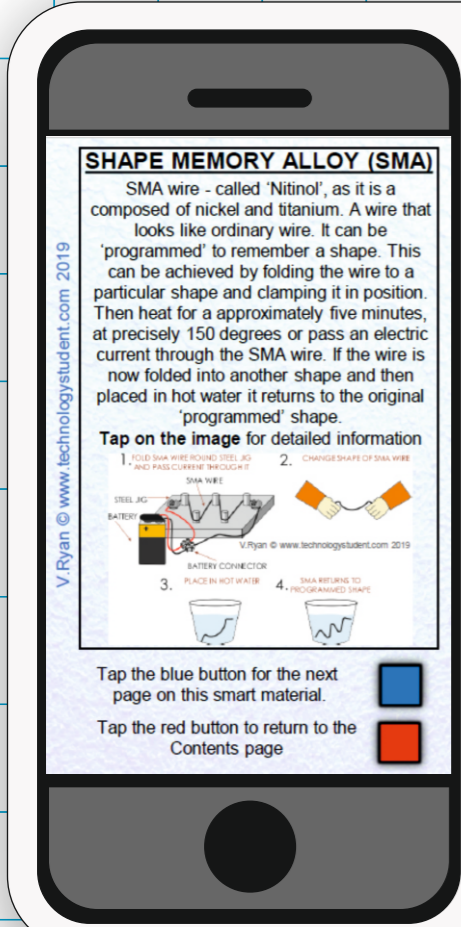
4

EXPLAIN THE PROCESS YOU SKETCHED IN Q3.

5

PASTE ONE IMAGE OF A PRODUCT MANUFACTURED FROM POLYMORPH
(You may need to research using the internet)

HELPFUL LINK: http://www.technologystudent.com/despro_flsh/mats_smart1.html



SHAPE MEMORY ALLOY

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1

WHAT IS SHAPE MEMORY ALLOY?

2

DESCRIBE HOW THIS MATERIAL IS PROGRAMMED TO REMEMBER A SHAPE.

3

PRODUCE A SKETCH REPRESENTING THE PROGRAMMING OF SMA, THAT YOU DESCRIBED IN Q2.

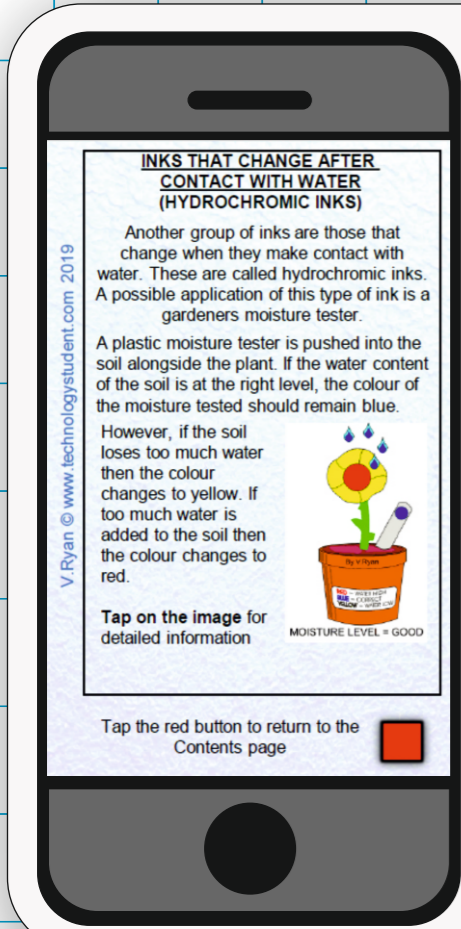
4

WHAT IS MUSCLE WIRE?

5

SKETCH A PRACTICAL APPLICATION OF MUSCLE WIRE (Include descriptive labels)

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SMART INKS

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**ARE YOU READY?
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1 WHAT ARE HYDROCHROMIC INKS?

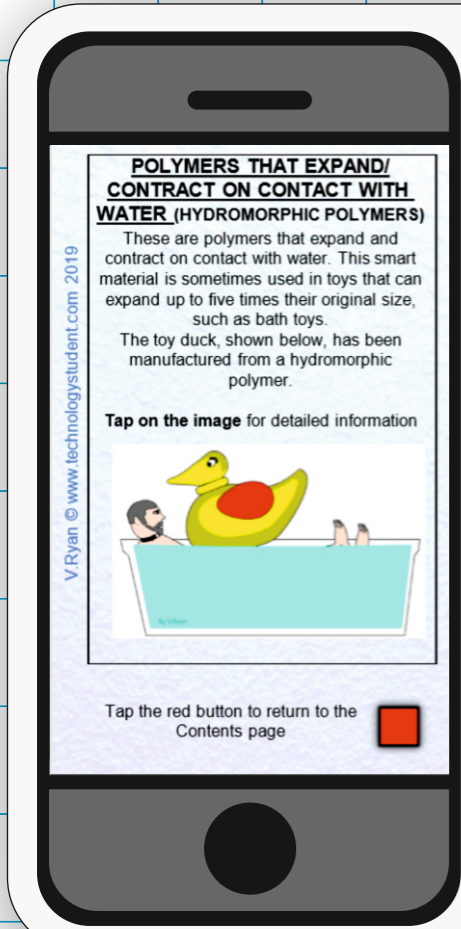
2 DESCRIBE A PRACTICAL APPLICATION OF THIS INK

3 SKETCH A PRACTICAL APPLICATION OF THERMOCHROMIC INKS (Add a brief explanation)

4 WHAT IS PHOTOCROMIC INK?

5 DRAW A LABELLED DIAGRAM OF A PRACTICAL APPLICATION OF PHOTOCROMIC INK?

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HYDROMORPHIC POLYMERS

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1

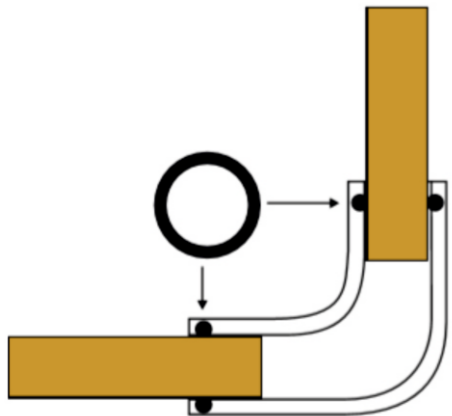
WHAT ARE HYDROMORPHIC POLYMERS?

2

DESCRIBE HOW HYDROMORPHIC POLYMERS ARE SOMETIMES USED FOR 'TOYS'

3

EXPLAIN THIS APPLICATION OF HYDROMORPHIC POLYMERS
(Add a brief explanation)



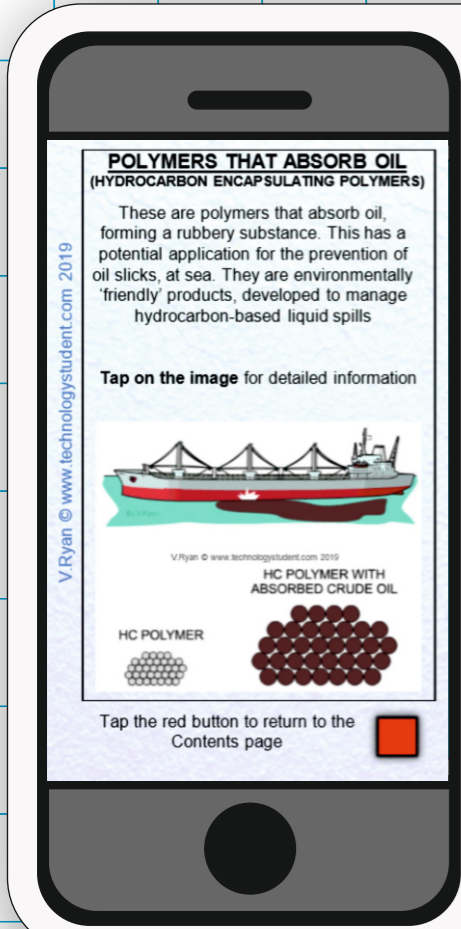
4

AS A DESIGNER, CAN YOU THINK OF AN INNOVATIVE USE OF THIS MATERIAL?

5

RESEARCH THE INTERNET AND LIST FURTHER USES OF HYDROMORPHIC POLYMERS

HELPFUL LINK: http://www.technologystudent.com/despro_flsh/mats_smart1.html



HYDROCARBON ENCAPSULATING POLYMERS

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**ARE YOU READY?
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1

WHAT ARE HYDROCARBON ENCAPSULATING POLYMERS?

2

DESCRIBE A SMALL SCALE PRACTICAL APPLICATION OF HC POLYMERS

3

SKETCH A LARGE SCALE PRACTICAL APPLICATION OF HYDROCARBON ENCAPSULATING POLYMERS (Add a brief explanation)

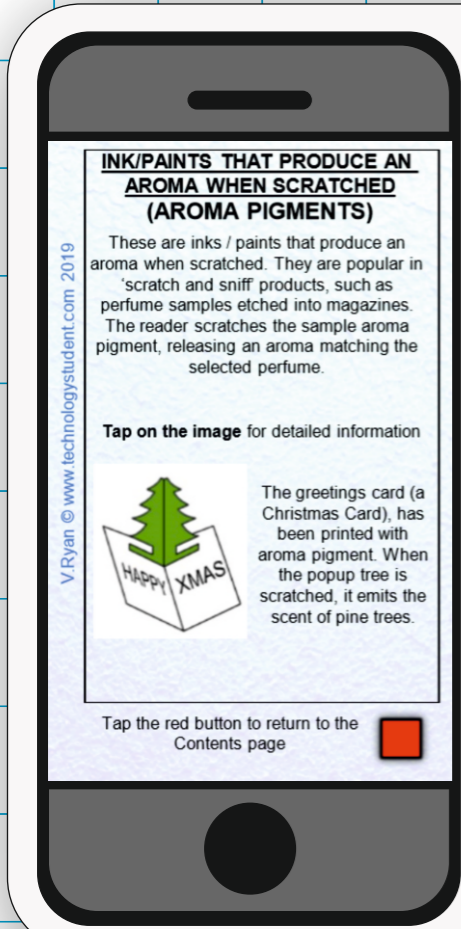
4

WHEN HC POLYMER HAS BEEN USED TO 'ABSORB OIL', HOW CAN IT BE REUSED/DISPOSED OF?

5

RESEARCH THE INTERNET AND LIST FURTHER USES OF HC POLYMERS

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AROMA PIGMENTS

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1

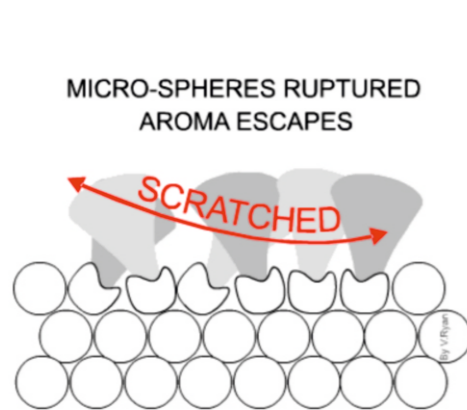
WHAT ARE AROMA PIGMENTS?

2

HOW COULD A CAR SALESPERSON USE AN AROMA PIGMENT?

3

THE DIAGRAM BELOW REPRESENTS AROMA PIGMENTS. WRITE AN EXPLANATION OF THE DIAGRAM



4

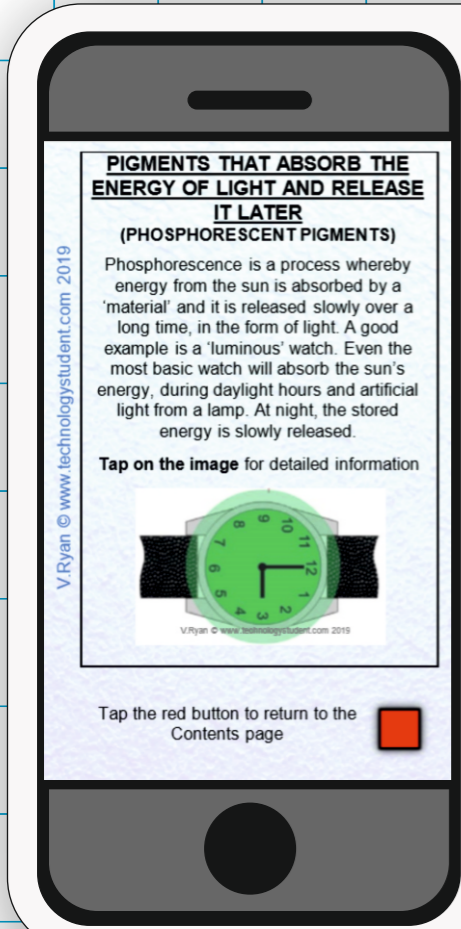
EXPLAIN THE USE OF AROMA PIGMENTS ON GREETING CARDS



5

DESCRIBE ONE MORE USE OF AROMA PIGMENTS. (YOU MAY NEED TO SEARCH THE INTERNET)

HELPFUL LINK: http://www.technologystudent.com/despro_flsh/mats_smart1.html



PHOSPHORESCENT PIGMENTS

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**ARE YOU READY?
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1 WHAT ARE PHOSPHORESCENT PIGMENTS?

2 HOW CAN THE USE OF PHOSPHORESCENT PIGMENTS, FOR SIGNS, BE BENEFICIAL?

3 THE DIAGRAM BELOW REPRESENTS ONE USE OF AROMA PIGMENTS. WRITE AN EXPLANATION TO SUPPORT THE DIAGRAM.



4 LIST FIVE MORE PRODUCTS THAT BENEFIT FROM THE USE OF THESE PIGMENTS. (YOU MAY NEED TO SEARCH THE INTERNET)

5 WHAT IS THE DIFFERENCE BETWEEN 'PHOSPHORESCENCE' AND 'FLUORESCENCE'?

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SELF-HEALING MATERIALS

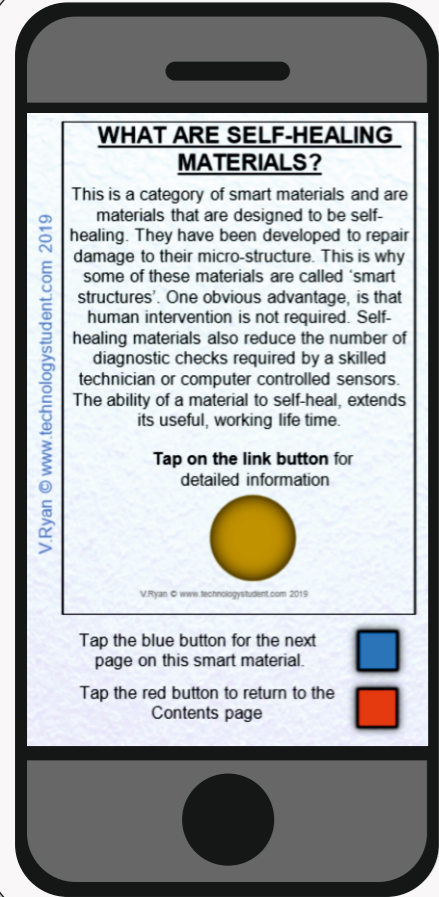
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**ARE YOU READY?
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1 WHAT ARE SELF-HEALING POLYMERS AND ELASTOMERS?

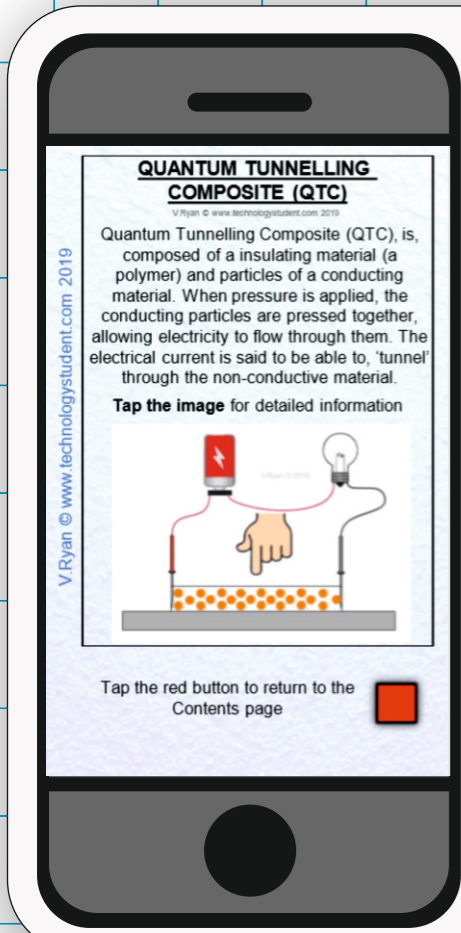
2 WHAT IS SELF-HEALING CONCRETE?

3 THE DIAGRAM BELOW REPRESENTS A SELF-HEALING POLYMER COATING. EXPLAIN THE DIAGRAM.

4 HOW CAN SOME CIRCUIT BOARDS BE SELF-HEALING?

5 DRAW A DIAGRAM REPRESENTING CROSS LINKING OF LONG CHAIN POLYMERS (SELF-HEALING POLYMERS)

HELPFUL LINK: http://www.technologystudent.com/despro_flsh/mats_smart1.html



QUANTUM TUNNELLING COMPOSITE (QTC)

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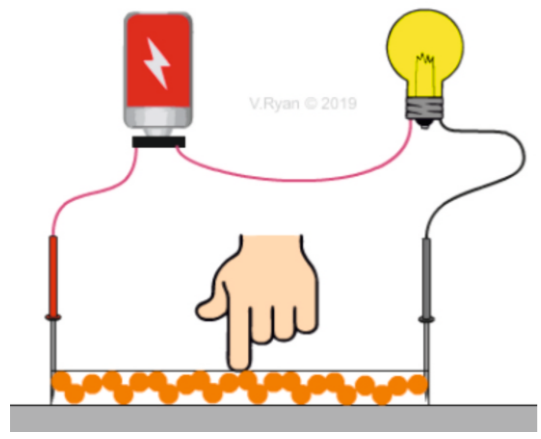
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**ARE YOU READY?
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1 WHAT IS QTC MATERIAL?

2 LIST PRACTICAL APPLICATIONS OF QTCs

3 THE DIAGRAM BELOW REPRESENTS A PRACTICAL USE OF A QTC MATERIAL. EXPLAIN THE DIAGRAM.



4 FROM YOUR ANSWER TO Q2, SELECT ONE PRACTICAL APPLICATION AND EXPLAIN IT BELOW. INCLUDE A SKETCH(S)
(your may need to research using the internet)

HELPFUL LINK: http://www.technologystudent.com/despro_flsh/mats_smart1.html

PIEZOELECTRIC MATERIALS

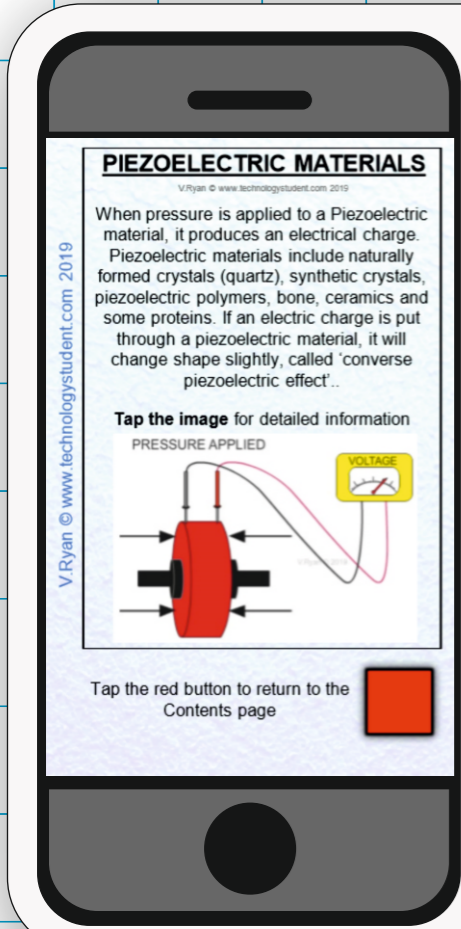
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1

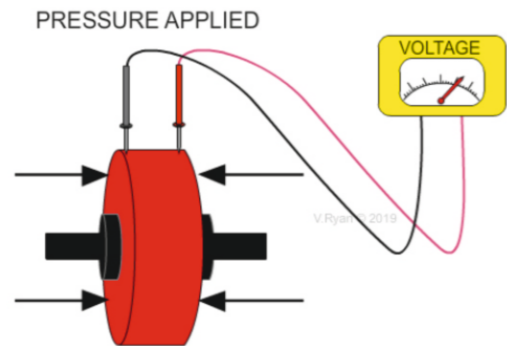
WHAT IS A PIEZOELECTRIC MATERIAL?

2

EXPLAIN THE USE OF A PIEZOELECTRIC MATERIAL, IN A PIEZO SPEAKER

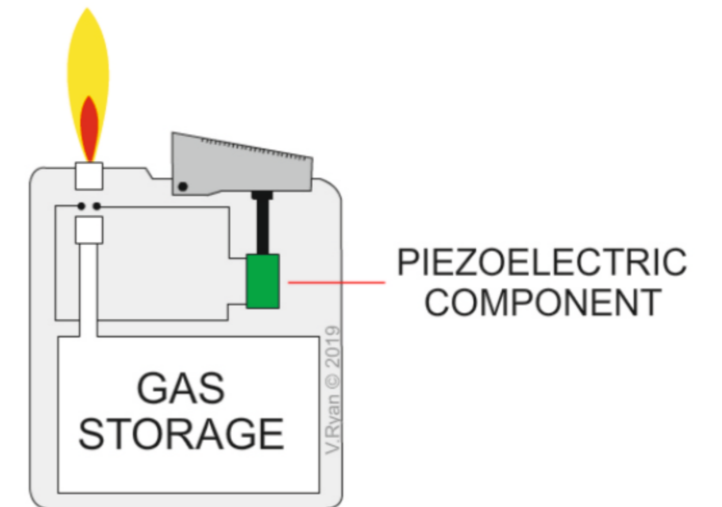
3

THE DIAGRAM BELOW REPRESENTS A PRACTICAL USE OF A PIEZOELECTRIC MATERIAL. EXPLAIN THE DIAGRAM.



4

STUDY THE DIAGRAM BELOW. EXPLAIN WHAT IT SHOWS AND THE ROLE OF THE PIEZOELECTRIC COMPONENT.



HELPFUL LINK: http://www.technologystudent.com/despro_flsh/mats_smart1.html