



## 22-2 law of conservation / not accurate

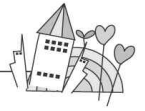
As it turns out, the law of conservation of energy isn't completely accurate. Energy and matter are actually interchangeable. In other words, energy can be created (made out of matter) and destroyed (turned into matter). As a result, the law of conservation of energy has been changed into the law of conservation of matter and energy. This law states that: *the total amount of mass and energy in the universe is conserved* (does not change). This is one of the most important laws you will ever learn. Nevertheless, in chemistry we are rarely concerned with converting matter into energy or energy into matter. Instead, chemists deal primarily with converting one form of matter into another form of matter (through chemical reactions) and converting one form of energy into another form of energy.

### ✓ Translation

결국은 에너지 보존의 법칙이 전적으로 정확한 것은 아니다. 에너지와 물질은 실제로 서로 바뀔 수 있다. 다시 말해서, 에너지는 생성될 수(물질로부터 만들어 질 수) 있고 파괴될 수(물질로 바뀔 수) 있다. 그 결과, 에너지 보존의 법칙은 물질과 에너지보존의 법칙으로 바뀌었다. 이 법칙은 '우주에 있는 질량과 에너지의 총량은 보존된다(변하지 않는다)'라고 기술한다. 이것은 여러분이 향후 배우게 될 가장 중요한 법칙 중 하나다. 그럼에도 불구하고, 화학에서 우리는 물질을 에너지로 또는 에너지를 물질로 전환하는 것에 거의 관심을 기울이지 않는다. 대신에, 화학자들은 한 가지 형태의 물질을 (화학 반응을 통해서) 다른 형태의 물질로 전환하는 것과 한 가지 형태의 에너지를 다른 형태의 에너지로 전환하는 것을 주로 다룬다.

### ✓ Note





## ✓Voca

- conservation 보존
- interchangeable 서로 바뀔 수 있는
- convert 전환하다
- state 기술하다, 진술하다
- mass 질량

## ✓핵심

As it turns out, the law of conservation of energy isn't completely accurate. Energy and matter are actually interchangeable. \_\_\_\_ (A) \_\_\_\_, energy can be created (made out of matter) and destroyed (turned into matter). As a result, the law of conservation of energy has been changed into the law of conservation of matter and energy. This law states that: *the total amount of mass and energy in the universe is conserved* (does not change). This is one of the most important laws you will ever learn. \_\_\_\_ (B) \_\_\_\_, in chemistry we are rarely concerned with converting matter into energy or energy into matter. Instead, chemists deal primarily with converting one form of matter into another form of matter (through chemical reactions) and converting one form of energy into another form of energy.

## ✓Reminding

As it turns out, the law of conservation of energy isn't completely \_\_\_\_\_. Energy and matter are actually \_\_\_\_\_. \_\_\_\_\_, energy can be created (made out of matter) and destroyed (turned into matter). \_\_\_\_\_, the law of conservation of energy has been changed into the law of conservation of matter and energy. This law states that: *the total amount of mass and energy in the universe is conserved* (does not change). This is one of the most important laws you will ever learn. \_\_\_\_\_, in chemistry we are rarely concerned with converting matter into energy or energy into matter. \_\_\_\_\_, chemists deal primarily with converting one form of matter into another form of matter (through chemical reactions) and converting one form of energy into another form of energy.





### 22-3 a strange thing about ants

Those who have studied the ways of ants tell us strange things about their social life. Just as in ancient days men kept slaves to work for them, so some ants raid the homes of other ants, and, making them captives, bring them back to their own nests and compel them to work for their captors. Ants, indeed, are by no means the only inhabitants of ants' nests. We are told that several hundreds of other small creatures, such as beetles and crickets, make their homes with ants. Some of these creatures are useful to the ants, cleaning up the nests and doing other duties, while others seem to be mere boarders, doing nothing for their keep. Why the ants allow these mere boarders to stay no one knows. Is it sheer good nature or is it the feudal spirit of keeping a large group of servants?

### ✓ Translation

개미들의 습성을 연구한 사람들은 개미들의 사회생활에 관한 이상한 것들을 우리에게 들려준다. 고대에 인간들이 자신들을 위해 일할노예를 갖고 있었던 것과 마찬가지로, 일부 개미들은 다른 개미들의 집을 습격하여 그들을 포로로 만들고 그들을 자신의 집으로 데려와 그들을 붙잡아 온 이들을 위해 일하도록 강요 한다 사실, 개미는 개미의 집에 사는 유일한 거주자는 결코 아니다. 딱정벌레나 귀뚜라미와 같은 수백 마리의 다른 작은 생물들이 개미들과 함께 거주하고 있다고 한다. 이러한 생물들 중 일부는 집을 청소하거나 다른 임무를 담당하여 개미들에게 유용하지만, 다른 것들은 자신들의 식량을 얻기 위해 아무 일도 하지 않는 단순 기숙자들로 보인다. 개미들이 왜 이 단순 기숙자들을 머물게 해 주는지는 아무도 모른다. 그것은 순전히 착한 천성일까, 아니면 대규모집단의 하인들을 거느리는 봉건적인 정신일까?

### ✓ Note





## ✓Voca

- |                  |                         |
|------------------|-------------------------|
| • boarder 기숙자    | • by no means 결코 ~이 아닌  |
| • keep 식량, 생활필수품 | • inhabitant 거주자, 서식 동물 |
| • ancient 고대의    | • creature 생물           |
| • slave 노예       | • beetle 딱정벌레           |
| • captive 포로     | • cricket 귀뚜라미          |
| • compel 강요하다    | • sheer 순전한             |
| • captor 포획자     | • servant 하인            |

## ✓해변

Those who have studied the ways of ants ① to tell us strange things about their social life. Just as in ancient days men kept slaves to work for them, ② so some ants raid the homes of other ants, and, making them captives, bring them back to their own nests and compel them to work for their captors. Ants, indeed, are by no means the only inhabitants of ants' nests. We are ③ told that several hundreds of other small creatures, such as beetles and crickets, make their homes with ants. Some of these creatures are useful to the ants, cleaning up the nests and doing other duties, while others seem to be mere boarders, ④ doing nothing for their keep. Why the ants allow these mere boarders ⑤ to stay no one knows. Is it sheer good nature or is it the feudal spirit of keeping a large group of servants?

## ✓Reminding

Those who have studied the ways of ants tell us \_\_\_\_\_ things about their social life. Just as in ancient days men kept slaves to work for them, so some ants raid the homes of other ants, and, making them captives, bring them back to their own nests and compel them to work for their captors. Ants, indeed, are by no means the only inhabitants of ants' nests. We are told that several hundreds of other small creatures, such as beetles and crickets, make their homes with ants. Some of these creatures are \_\_\_\_\_ to the ants, cleaning up the nests and doing other duties, while others seem to be mere boarders, doing \_\_\_\_\_ for their keep. Why the ants allow these mere boarders to stay no one knows. Is it sheer good nature or is it the \_\_\_\_\_ spirit of keeping a large group of servants?





## 22-4 inner world creates outer world

The whole field of Darwinism/evolution is based on the critical assumption that life is **shaped by the outer environment**. This generated the sociology of 'the environment' as determining the character of living beings. And yet, in a pure sense, what is life? **Life is the unfolding of the inner potential**. Potential is fulfilled by action, just as a seed, with its inward certainty of bursting life and future fruit generation, is fulfilled by action through water, soil, and Sun. **The environment does not determine the inner potential** - it can only help or hinder its expression. The physical world of Nature is in reality the materialization of the inner spiritual potential of all living things. **The inner world creates the outer world.**

### ✓ Translation

다윈설/진화론의 전체 영역은 생명체가 외부환경에 의해 형성된다는 중요한 가정에 근거를 두고 있다. 이것은 생명체의 성질을 결정하는 것으로서의 '환경'에 관한 사회학을 만들어 냈다. 하지만 순수한 의미에서, 생명체란 무엇인가? 생명체는 내부의 잠재력이 펼쳐진 것이다. 생명을 싹틔워 장차 열매를 맺을 내부적인확실성을 지닌 씨앗이 물, 토양, 그리고 태양을 통한 작용에 의해 실현되는 것과 마찬가지로 잠재력은 작용에 의해 실현된다. 환경이 내부의 잠재력을 결정하는 것이 아니고, 그것은 그것(내부의 잠재력)의 발현을 돕거나 방해할 수 있을 뿐이다. 자연이라는 물리적 세계는 사실상 모든 생명체가 지닌 내부의 정신적 잠재력이 구체화된 것이다. 내부 세계가 외부 세계를 만드는 것이다.

### ✓ Note





## ✓Voca

- Darwinism 다윈설, 진화론
- evolution 진화(론)
- critical 중요한
- assumption 가정
- generate 만들어 내다
- determine 결정하다
- unfold 펼쳐지다
- potential 잠재력
- fulfill 실현하다
- hinder 방해하다
- expression 발현, 표출
- materialization 구체화, 실현
- spiritual 정신적인

## ✓햇번

The whole field of Darwinism/evolution is based on the critical assumption that life is shaped by the outer environment. This generated the sociology of 'the environment' as determining the character of living beings. And yet, in a pure sense, what is life? Life is the unfolding of the inner potential. Potential is fulfilled by action, just as a seed, with its inward certainty of bursting life and future fruit generation, is fulfilled by action through water, soil, and Sun. The environment does not determine the inner potential - it can only help or hinder its expression. The physical world of Nature is in reality the materialization of the inner spiritual potential of all living things. The inner world creates the outer world.

- ① 환경에 적응하는 힘을 길러야 한다.
- ② 삶은 짜여진 계획표대로 살아가야 한다.
- ③ 삶에 미치는 환경의 제한은 매우 강력하다.
- ④ 환경과 내적 잠재성의 균형을 이루는 것이 중요하다.
- ⑤ 내적 잠재성이 외부의 환경을 결정짓는데 중요한 역할을 한다.

## ✓Reminding

The whole field of Darwinism/evolution is based on the critical assumption that life is shaped by the \_\_\_\_\_. This generated the sociology of 'the environment' as determining the character of living beings. And yet, in a pure sense, what is life? Life is the \_\_\_\_\_ of the inner potential. Potential is fulfilled by action, just as a seed, with its inward \_\_\_\_\_ of bursting life and future fruit generation, is fulfilled by action through water, soil, and Sun. The environment does not determine the inner potential - it can only help or hinder its expression. The physical world of Nature is in reality the materialization of the inner spiritual potential of all living things. The \_\_\_\_\_ world creates the \_\_\_\_\_ world.

