



Biological chandelier

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LIVING CHANDELIER IMPROVES AIR QUALITY

 TELECOMMUNICATIONS

A chandelier has been developed that mimics biological processes, absorbing carbon dioxide and ‘exhaling’ oxygen.

In the past, we have seen a wide variety of innovative lighting designs, such as a lamp that mimics [natural light](#), to prevent seasonal affective disorder. Innovative ways are also being developed for using biological materials to filter pollutants out of the air, including a [street-side column filled with algae](#). Now, a design engineer has developed a way to combine the two with a ‘living chandelier’ that not only looks beautiful but also absorbs carbon dioxide from the air and releases oxygen. The Exhale Chandelier is the work of Julian Melchiorri, the first Engineer in Residence at London’s [Victoria and Albert Museum](#).

Melchiorri based the chandelier on his previously developed ‘Silk Leaf’, an artificial leaf made of chloroplasts (the chlorophyll containing part of the plant) stabilized in a silk protein. Water and nutrients are supplied to the leaf through osmosis, in a similar way to how natural leaves work. For the Exhale Chandelier, Melchiorri adapted the artificial leaves into 70 petals in three different sizes. Each petal contains green algae, sustained by a drip-feed of nutrients and water, and lit by LED lights. The algae absorbs carbon dioxide and ‘breathes out’ oxygen. The effect is a unique lighting fixture that purifies the air naturally.

Melchiorri envisions his artificial leaves and chandeliers eventually being used in applications such as ventilation systems, as free form surfaces for interiors, or even in space exploration. His goal is to develop new ways to mimic biological mechanisms to efficiently solve problems in an aesthetically

pleasing way. In the future, will technology that mimics biological processes be capable of improving the urban environment on a large scale?

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