Interior design standards for some innovative materials

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Summary:

Interior design is a science, that has special requirements and needs integrated studies that must be reached to meet the functional needs of the space, with regards to the aesthetic aspects of it.

There is no doubt that the choice of materials used in the implementation of different designs plays a key role in solving design problems, and the design success or failure fall on it, as for both of formal formulations or functional requirements.

There has been a great revolution in the field of interior design materials, it is no longer limited to traditional materials as wood, glass, ceramics...and others. but it was developed by modern science, so we find smart materials and nano materials without neglecting the traditional and natural raw materials.

Interior designers should know the different design criteria for each material to implement any design, by studying its characteristics and the strength or weakness of its capabilities and operational limits.

There is no doubt that each material has a variety of individual characteristics, which can be used in conciliation with other materials, to create various designs, and until this process is completed, it is necessary to get to know the nature of these materials and their design criteria, and the more we fully understand the nature of the material, the more it can be used to the fullest extent in creating and designs, as the material control the quality of the designs produced by them as all the severity of its boundaries, characteristics, capabilities, and limitations.

Keywords:

Design considerations - smart materials -nanomaterials- interactive materials.

Problem of the research:

Lack of previous studies that determine these materials or their interior design usage, strengths or weaknesses.

Limited use of these materials, due to the lack of resources to explain these materials and how to use them in a successful design.

The research imposition:

the research assumes that the optimal use of the materials developed in the interior design is by knowing and applying the design criteria for each word separately.

The research goals:

Trying to clarify some types of materials and determine the differences among them.

Trying to reach some functional and aesthetic standards to achieve the possibility of dealing with them in a suitable way.

The research limits:

It is limited to some of the most common new materials used in the field of interior design and furniture.

The research importance:

Monitoring some types of materials that have been developed, and trying to shed light on how to use them optimally in different environments.
using this research as a reference tool for methods of using these developed materials.

The research methodology:

The research deals with the descriptive analytical approach in a theoretical framework through the following axes:
First: design standards, second: types of design standards, third: raw materials in interior design, forth: results and recommendations.

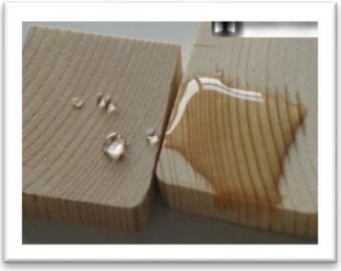
The rules for choosing materials in interior design:

The interior designer choices of materials based on several considerations, which are technical, economic, symbolic considerations, besides the characteristics of the visual, acoustic, texture, color, and properties of the raw material and if it is natural or manufactured material. Each space has specificity terms, which are the function of the space, the external environment surrounding it.
That`s why specific materials associated with specific buildings or stereotypes such as blue ceramic tiles in the Andalusia Islamic style, for example. Based on this we find that the design requirements for raw materials are summarized in the following points:

1. It should depend on its durability and the environment conditions induration.
2. It must have a sustainability factor, and can be renewed, modified or changed from time to time.
3. Economic convenience of the project costs.
4. The choice of the material according to the surrounding environment, for example not to use rough texture materials in dusty environments, but we should use fairy smooth surface materials.
5. choosing materials according to humidity, cold and heat factors, that's because each material has a tolerance that affects its shelf life.

pic.1 shows the glass which changed its transparency.

pic.2 shows the translucent concrete in the interior design.



pic.3 shows the effectiveness finishing of waterproof paints.

		
pic.4 shows the transparent wood.	**pic.5 shows ETFE panels on the buildings facades.**	**pic.6 shows th LED wall paper.**

Basic design standards for some innovative interior design materials						
Notes	**Humanitarian considerations**	**Aesthetic standards**	**Economic standards**	**Utilitarian standards**		
Using treated glass: -Leads to maintaining the visual link and merging the outside with the interior. -Reducing electrical energy consumption Cheap cost and low maintenance and expenses. -Increase space as an alternative to external walls.	Availability of lighting during the day.	It combines inner and external environment.	Save the effort, time and money that will be spend in the cleaning process.	Anti-stick dust glass or dirt by optical stimulation.	Self cleaning glass	glass
	Providing necessary lighting for inner spaces, and privacy, also it controls the spaces climate by reducing temperatures.	Adding a dynamic movement with automatic control, gives rich visual, and possibility of using curved facades formations to give a shape flow and merging its structural components.	Provide the use of light reflectors to allow natural light to enter.	Protection from thermal emissions and glare of shiny surfaces.	Sun protective glass	
			Reducing energy consumption for lighting, and the consumption of air conditions.	Reducing convection, achieving natural balance and making the most benefit of day light.	UV rays protective glass	
			Reducing electrical energy consumption for ventilation and air conditioning.	Combining the advantages of all treated glass for self-cleaning, protection from heat and UV rays.	Multi-functional glass	
Rarely to find building without concrete.	Day lighting & preserving privacy.	Transparent gives the impression that the concrete weight is lighter.	No need for painting and reducing the consumption of electrical energy for lighting.	Using sunlight as a source of lighting, feeling the vitality of the inner space.	Transparent concrete	concerete
	Create healthy & climate friendly indoor spaces as a result of the shades caused by the tiles.	Ability to implement flexible organic designs with free flow lines.	Increased shelf life due to not being affected by water, salts, fungi & insect resistance.	Resistant to tension, pressure & deformations as it's 5 times stronger than ordinary .concrete	GRC	

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Notes	**Humanitarian considerations**	**Aesthetic standards**	**Economic standards**	**Utilitarian standards**		
	Wood is a natural material that creates a feeling of simplicity while achieving safe and healthy environmental conditions and comfortable climate conditions.	Giving glossy and even exterior look.	Improves wood resistance and hence increases its shelf life.	Resistance to scratching, friction, UV protection, resistance to fungi and algae or mold, increased solidity.	Wood paintings	wood
It was not produced in the markets significantly due to its high manufacturing cost.		Contributes to the use of natural or industrial lighting when designing.	Solid and unbreakable or scratching, which increases its economic value.	Wood retains its natural properties while increasing its transparent appearance property.	Transparent wood	
Makes interior spaces multifunctional.		Give a dynamic interactive value to different surfaces.	Using surfaces for more than one purpose increases their economic value.	The ability to convert flat surfaces into smart displays.	Nano protect plastic	polemere
Most wallpaper types are made from cellulose or synthetic polymers that increase fire rather than prevent them.	It doesn't need space so it leads to increasing the interior area.	It has designs with various surfaces that are not available in any other material.	Save time and effort in painting operations or wall cladding.	Warns of fires and their resistance.	Smart wall paper	Wall paper
		Its flexible & provide dynamism due to LED lighting.		Adds controlled lighting from the walls.	LED Wallpaper	

schedule 1. Basic design standards for some innovative interior design materials

Results:

- using these materials in interior design enriches the local environment with culture and technology.
- Employment of innovative materials in interior design enriches the local environment with technological and civilization culture, and shows the vision and capabilities of the designer in the process of understanding and application possibility.
- The application of design standards in the use of materials developed in interior design leads to the depth of functional and aesthetic solutions for spatial spaces. That's beside the possibility of multi-function for the interior design units.

Recommendations:

- The necessity of activating the role of companies and the business sector in financing scientific research related to modern technology and making use of the research outputs.
- The necessity for students in the field of interior design and furniture of defining and studying on technology and innovative materials that lead to extend perceptions and absorb new ideas, philosophies and global trends in design.
- The necessity of developing the concept of interior design and applying international standards, innovative materials and technology in local projects.

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