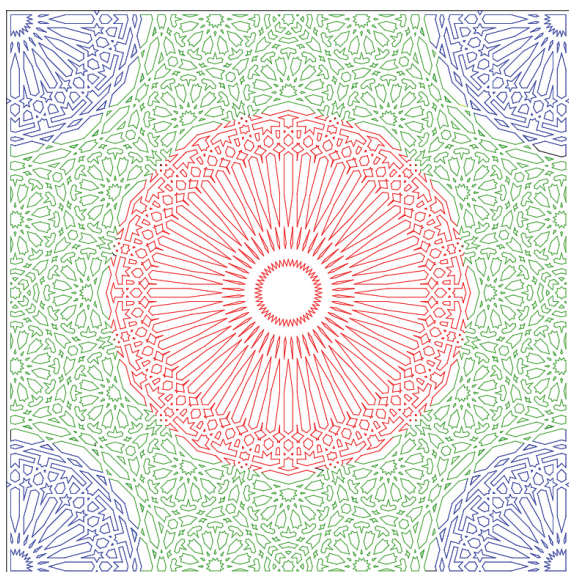


It will then be possible to achieve all the known patterns on any plane area whatever by using computational program, to improve the existing pattern and to innovate others 2-dim as well as 3-dim patterns. Two methods of construction, the Foussaïfissa and Hasba, are used in the realization of Moroccan geometric patterns. The Foussaïfissa method, rather adapted to the construction of the finer mosaics leads to decorated framework space or basic pattern constituted of central area called Rosette (“Naâoura”), a peripheral area at the limit of the framework (“Alaach”), and an interface area Belt (“Lahzam”). The symmetry of the Rosette generally multiple of 8-fold is the symmetry of the motif. This method introduces a misfit between central area and periphery. To build valid motifs with perfect adequacy between the three areas, designers have to respect scrupulously several artistic rules of drawing based on the notion of module measure called Hasba.



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Keywords: symmetry; geometric pattern; measure

FA2-MS03-P04

Anatolian Turkish Architectural Ornamentation: Crystal Symmetry Applications. Didem Rodoplu^b, Semra Ide^c, Elif Hilal Soyulu^d, Nermin Saman Dogan^a, Ebru Bilget^a, Heval Simsek^a. ^a*Hacettepe University, Department of Art History, 06800 Beytepe-Ankara, Turkey.* ^b*Hacettepe University, Institute of Pure and Applied Sciences, Nanotechnology and Nanomedicine Division, 06800 Beytepe-Ankara, Turkey.* ^c*Hacettepe University, Department of Physic Engineering, 06800 Beytepe-Ankara, Turkey.* ^d*Karadeniz Technical University, Faculty of Science & Literatur, Department of Physics 61080, Trabzon, Turkey.*
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Symmetry, from molecular size to macro size has amazingly become a part of our life [1-3]. From our historical behind, symmetry shows itself by visual work of art. At present time, this symmetry knowledge is used for technological applications. It's importance can be seen at scientific studies as much as artistic applications. And also, symmetry knowledge carries us from the basic scientific scope to physics' (Quadratic Phase Transition Theory- Spontaneous Symmetry) and mathematics' (Diamond Theory) modern theories [4-5]. Crystal structures have excellent arrangements indicating by so many symmetry elements. In crystallography as well as structure analysis, subjects such as phase transitions, supramolecular structures' chemical design needs symmetry knowledge. Art and science can not be apart from each other. For scientific study, we transfer the whole systematic knowledge into our study but for artistic studies we express our emotions. With this study, we aimed bringing together art and science to investigate Turkish historical and cultural resources. We investigated Anatolian Seljuk and Emirates Period (in 13th -14th Centuries) religious and social architectural buildings' geometrical and vegetal ornamentalations [6-7]. In addition to these samples' drawings, evaluations and original photographs are classified. As a conclusion, seeing these symmetrical applications together, can be beneficial for different disciplines such as architecture, art history, textile, crystallography, geometry, mathematical calculations, etc. Firstly, during the measurement analysis it has been found amazing, having long range huge patterns beside unit motifs. Another striking example comes across as two dimensional symmetrical applications which include curve-spherical surfaces.

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Keywords: architectural ornamentation; symmetrical application; crystallography

FA2-MS03-P05

Characterization of Clay Used for Beauty by the Moroccan Traditional Women. Fatima-Zahra Boujrhaj^{a,b}, Rajaâ Cherkaoui El Moursli^b, Herbert Poellmann^c. ^a*Université Sultan Moulay Slimane, Faculté des Sciences, B.P. 523, Béni Mellal, Morocco.* ^b*Laboratoire de Physique Nucléaire, Faculté des Sciences, B.P. 1014, Rabat, Morocco.* ^c*Institute for Geological Sciencesm Mineralogy/Geochemistry Von-Seckendorff-Platz 3, 06120 Halle/Saalem Germany.*
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Moroccan traditional women use, since still, the natural products for their beauty, like Henna (plants), kohl and clays (minerals).

Indeed, a various selected plants mixed with the Henna are used like mask for hairs in order to treat and to soften them, the kohl are prepared from some minerals and the green clays have a vast number of applications like a mask or shampooing for hairs and as a product for the mineral salt contribution for their body by eating.

The last application of clay has been the main motivation for the present study, in order to characterize and to valorise this mineral.

For the characterisation, a various techniques are used, like X-ray diffraction, Infra red, Raman and thermo-gravimetric analysis and a comparative study is done for European pharmaceutical clays.

The obtained results allow us to make a direct comparison between the tow clays: traditional and pharmaceutical one. These researches must be deepening in order to valorise this mineral.

Keywords: natural products; moroccan clays; beauty

FA2-MS03-P06

XRF and DRX Analysis of Numide Archaeological Coin. Mousser Henia^a, Madani Abdelghani^a, Amri Redha^a, Mousser Abdelhamid^b, Darchen Andre^c. ^aDépartement de Chimie Industrielle, Université Mentouri Constantine, Algérie. ^bDépartement de Chimie, Université Mentouri Constantine, Algérie. ^cLaboratoire d'électrochimie, Ecole Nationale Supérieure de Chimie de Rennes, France.

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The thorough knowledge of a work of art or an archaeological object, under its various aspects, like the structure or the chemical composition of constitutive materials is a precondition to any applied research, in industry, in history of art or in archaeology, like with any intervention in conservation or restoration. Museum CIRTÀ of the town of Constantine has a collection of more than 35000 coins and statuettes going back to Numide, Roman, Republican, Vandal and Byzantine times. On the coins are struck the name of the cities, of the kingdoms and the empires. This work is a contribution of microchemical surface study of a Numide coin (Algeria between 3rd and 2nd century before Jesus Christ). Photography, energy dispersive fluorescence spectrometry (XRF) and x-ray diffraction (DRX) were used. Photography shows the effigy of the king *Massinissa*. XRF analysis gives 99.9% of lead. The DRX identifies Lead element and two corrosion products Litharge (PbO) and Hydrocerussite (Pb₃(CO₃)₂(OH)₂).

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Keywords: XRF; DRX; lead; archaeology

FA2-MS03-P07

Beauty of Symmetries in Carpet of Babar (Khenchela-Algeria). Nourredine Benali-Cherif. *Laboratoire des Structures, Propriétés et Interactions Inter Atomiques (LASPPA). Institut des Sciences et Technologie. Centre Universitaire de Khenchela 40000, Algérie.*

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Babar city perched on a knoll south of Khenchela city-Algeria, in the heart of the Aures, famous for its traditional carpets, an immeasurable beauty in bright colors and generous, reflecting the true picture of the Chaoui tribes who live the region. The carpet (Zarbia) color red dominant *Dem El Ghzal* (blood gazelle) includes geometric patterns of Berber origin. All the beauty of these carpets made by women (three months for a carpet 3x2 m) is in the symmetries. Rotational and rotoinversion axis, inversion centers, mirror planes adorn this carpet and make it a unique model, synonymous with the pride of the people in my hometown.

Keywords: symmetry; art; crystallography