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Journal Name: Biomedical Signal Processing and Control **IF: 5.7**

Title: Intelligent brain tumor classification using a Bi-level optimized stacking ensemble with metaheuristic feature selection and Bayesian hyperparameters

Author: Tripathy B.; Chakraborty C.; Sahana S.K.

Details: Volume-131, Part-A, 30th March, 2027

Abstract: Brain tumor is a major neurological disorder that may severely influence the living standards of an individual. Early and precise diagnosis of a patient determines the quality of life and prognosis with a lot of accuracy. The accuracy of Magnetic Resonance Imaging has become significant, as Artificial Intelligence automates the process and proves to be an important asset in medical imaging. Several studies have looked at different processes to classify the tumor, but there is still a big need for research into how to make a framework that improves all of the parts and combines the predictive abilities of different models. To fill this gap, this study proposes a novel hybrid stacked model for classifying brain tumors into multiple groups. The suggested SMOTE-based TransSecOpt framework starts with transfer learning to get the basic features, followed by Synthetic Minority Over-sampling Technique (SMOTE) to balance the data. Particle Swarm Optimization (PSO) was used for feature selection, and the Optuna framework was used to fine-tune the hyperparameters of several machine learning models. The best optimized models are used as base learners in a stacking. This results in a meta-classifier that effectively integrates the strengths of individual base learners. The suggested model exhibits outstanding performance, attaining a recall of 92.34 %, accuracy of 92.34 %, precision of 92.61 %, and F1-score of 92.37 %. The model's robustness is corroborated by a Jaccard score of 86.00 %, a Cohen's kappa score of 89.49 %, and a Matthew's correlation coefficient of 89.58 %, demonstrating its efficacy as an automated brain tumor diagnosis tool.



URL: https://www.sciencedirect.com/science/article/pii/S174680942602207X?via%3Dihub

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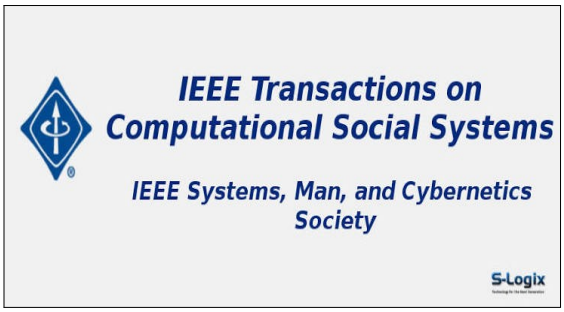
Journal Name: IEEE Transactions on Computational Social Systems **IF: 4.6**

Title: Guest Editorial: Special Issue on Intelligence of Social Things-Enabled Cooperative Learning for Behavioral-Cultural Modeling

Author: Chakraborty C.; Unhelkar B.; Mahmoudi S.; Margala M.; Barbosa S.

Details: Volume-13, Issue-1, 2026

Abstract:



URL: https://ieeexplore.ieee.org/document/11395549

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Journal Name: IEEE Journal on Emerging and Selected Topics in Circuits and Systems IF: 3.8

Title: Advanced Circuit Architectures and Systems for Distributed Intelligence

Author: Guduri M.; Chakraborty C.; Sham B.; Silva P.O.

Details: September 2026

Abstract: The rapid proliferation of edge devices, cyber-physical systems, autonomous platforms, and large-scale IoT infrastructures has fundamentally transformed how intelligence is computed and deployed. Traditional centralized cloud-based AI architectures are increasingly limited by latency, bandwidth, privacy, energy efficiency, and reliability constraints. As a result, distributed intelligence—where sensing, learning, inference, and decision-making are performed collaboratively across networked nodes—has emerged as a critical paradigm shift. While significant progress is made in creating smart AI algorithms and systems that can learn from each other, but there's still a big hole when it comes to the underlying technology that makes it all work. Basically, the circuits and systems that are developed aren't really built for this kind of distributed intelligence, where lots of devices are working together and sharing information in real-time. Most of the current hardware is just adapted from old centralized computing systems, which aren't ideal for collaborative, on-device, and federated intelligence. Hence there is a need for major innovations at the circuit and system level to make distributed intelligence scalable, secure, energy-efficient, and fast.



URL: https://ieeexplore.ieee.org/document/11677081

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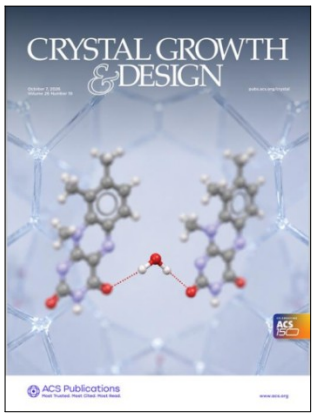
Journal Name: Crystal Growth and Design **IF: 3.6**

Title: Counter-Anion-Directed Supramolecular Organization Modulates Spin Crossover in Mononuclear Mn(III) Schiffâˆ’Base Complexes

Author: Panja A.; Jana N.C.; JagliÄ‡iÄ‡ Z.

Details: Volume-26, Issue-19, 7th October, 2026

Abstract: The influence of counter-anion-directed supramolecular organization on the spin-crossover (SCO) behavior of Mn(III) complexes has been systematically investigated using a series of seven mononuclear complexes containing the same SCO-active [Mn(5-Cl-3-Me-sal2-323)]+ cation paired with ClO4− (1), BF4− (2), BPh4− (3), PF6− (4), CF3SO3− (5), NO3− (6), and I− (7) counter anions. Variable-temperature magnetic susceptibility measurements reveal markedly different magnetic behaviors, ranging from a persistent high-spin (HS) state to nearly complete thermally induced spin crossover, despite the complexes possessing nearly identical MnN4O2 coordination environments. Variable-temperature single-crystal X-ray diffraction demonstrates that spin-state changes are accompanied by the characteristic anisotropic structural expansion of the equatorial MnN4 plane, while the axial Mn−O bonds remain essentially unchanged. Detailed analyses of the supramolecular structures reveal that the counter anions direct distinct hydrogen-bonding topologies and crystal packing arrangements. The absence of conventional hydrogen-bonding interactions is associated with the persistent HS state in complex 3, one-dimensional hydrogen-bonded chains are associated with broad and gradual spin crossover in complexes 1, 2, 4, and 5, whereas additional supramolecular cross-linking in complex 6 is associated with incomplete spin-state conversion and increased lattice rigidity. In contrast, an extended two-dimensional hydrogen-bonding network in complex 7 is associated with the largest extent of spin-state conversion in the series despite the comparatively weak individual N−H···I interactions. These results demonstrate that spin-crossover behavior is strongly influenced by the interplay between hydrogen-bond topology, crystal packing, and lattice flexibility, providing mechanistic insights for the rational design of Mn(III)-based spin-crossover materials.



URL:https://pubs.acs.org/cgdefu/article-abstract/26/19/7950/5435714/Counter-Anion-Directed-Supramolecular-Organization?redirectedFrom=fulltext

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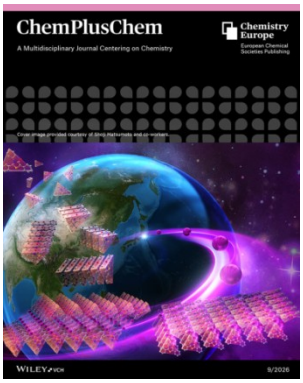
Journal Name: ChemPlusChem **IF: 3.1**

Title: Lower Rim Naphthyl-Functionalized Resorcin[4]arene Conformers: Column Chromatographic Separation and Adaptive Molecular Recognition

Author: Venkatesan I.; Sakthivel A.; Jana N.C.; Anandharaj M.A.; John Britto W.R.; Pramanik S.; Samanta J.

Details: Volume-91, Issue-9, September 2026

Abstract: Conformational bias plays a crucial role in host–guest complex. Due to spatial arrangements of binding sites, binding affinities of conformers differ significantly toward a guest. Consequently, isolation of conformers is a prerequisite in understanding host–guest complexes. Herein, we report the synthesis and separation of naphthalene-functionalized resorcin[4]arenes in two distinct conformations: chair and crown. The use of bulky naphthalene as a pendant at methylene bridge results in steric strain, yielding conformationally nonconvertible isomers, with large difference in dipole moment (Δμ = 6.83 D), facilitating their separation by traditional column chromatography. The isomers were characterized by NMR, mass, and X-ray diffraction analysis. Notably, in polar solvent, the crown isomer undergoes a conformational change to boat, in the upper rim, coupled with rotation of naphthalene in the lower rim. The solvent-dependent conformational and rotational change results in an electron-rich cavity in the lower rim in nonpolar solvent that binds with electron-deficient nitroaromatics. While the incorporation of naphthalene in the lower rim overcomes the bottleneck of separation of distinct conformers, the conformation-specific binding in the lower rim diversifies its applications beyond cation binding and paves a new direction in hosting guests in the lower rim which remained underexplored so far.



URL: https://chemistry-europe.onlinelibrary.wiley.com/doi/10.1002/cplu.70256