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Building a Neuro-inclusive Geochemical Community through a Multiscale Framework

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Integrating neurodivergent scientists into the geochemical community is challenging. Their cognitive strengths, such as deep analytical focus, pattern recognition, and systematic thinking, offer immense research potential. Yet, traditional academic/professional environments repeatedly pose structural barriers, leading to disproportionate attrition and significant talent loss—groups such as sexual and gender minorities, neurodivergents, and women from ethnic minorities are presently absent at the top of the academic ladder[1]. To address these challenges and encourage a cultural shift, we propose a multiscale framework targeting three codependent levels: scientific societies/conferences (macro), research institutions (meso), and laboratories and research teams (micro).

Direct feedback from neurodivergent scientists, systematized via an open survey[2] and cross-society surveys conducted in 2026, reveals a consistent triad of systemic barriers:

1) overwhelming sensory environments,

2) ambiguous social and professional protocols, and

3) a pervasive sense of being unseen, misinterpreted, or compelled to conceal one's identity.

These contribute to chronic stress and burnout and hinder career progression, underscoring the need for a coordinated structural response.

Macroscale: Societies must transform conferences into accessible hubs. Proactive communication through sensory maps and social narratives and core integration of structured community spaces have a significant impact. Normalizing flexible communication formats substantially improves accessibility and engagement.

Mesoscale: Streamlined traditional success metrics are not representative of the neurodivergent effort. Institutions need policies that mandate clear, multimodal communication and actively respond to individualized accommodations in workspaces. By providing training and accessible infrastructure, supervisors can rely on the tools needed to foster more inclusive cultures.

Microscale: Neurodivergent researchers prioritize supportive supervisors when choosing research laboratories. Success requires implementing structured collaboration protocols with clear expectations, flexibility, and strength-based mentorship that harnesses unique capabilities. Cultivate a safe environment by adapting to different learning/working styles, being mindful, and anticipating the conditions mentees/colleagues might need to reach their full potential.

Ultimately, building a neuro-inclusive geochemical community requires intentional, tiered action. This framework provides a concrete path to celebrate differences and cultivate belonging—a transformation that is both an ethical obligation and a strategic imperative.

[1]Anad et al., 2024.doi:10.3389/esss.2024.10098
[2]Vásquez et al., 2025.doi:10.1002/lob.10705