

ลักษณะปรากฏของลำดับชั้นหินภูเขาไฟพลาณารายณ์ อำเภอชัยบาดาล จังหวัดลพบุรี



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FACIES OF THE LAM NARAI VOLCANIC SUCCESSIONS IN AMPHOE CHAI BADAN,
CHANGWAT LOPBURI



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พิมพ์ต้นฉบับบทคัดย่อวิทยานิพนธ์ภาษาไทยในกรอบสี่เหลี่ยมนี้เพียงแผ่นเดียว

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เขตพื้นที่ภูเขาไฟในลำนารายณ์ เป็นแหล่งพุร้อนขนาดใหญ่ที่ยังคงเหลืออยู่ของการทับถมตัวอย่างต่อเนื่องของลาวาและ
ละอองซึ่งได้ภูเขาไฟชนิดต่างๆ มีส่วนประกอบตั้งแต่หินบะซอลต์ไปจนถึงหินไรโอไลต์ ในการทับถมเป็นลำดับชั้นของหินภูเขาไฟทำให้
สามารถลำดับชั้นตอนการเกิดได้ดังนี้ เริ่มต้นด้วยชั้น intermediate-composition lavas ตามด้วยชั้น silicic tuffs และ
silicic lavas และจบลงด้วยชั้น basaltic lavas ตามลำดับ

ชั้น early intermediate-composition lavas เป็นคั้งขี้นซึ่งถึงระยะแรกในปฏิกิริยาการระเบิดของภูเขาไฟ
จำนวนมากที่กระจายตัวอยู่ในพื้นที่ดังกล่าว ประกอบด้วยชั้นลาวาแทรกสลับชั้นของหินบะซอลติก แอนดิไซต์, หินแอนดิไซต์ และหิน
เคไซต์ เหมือนคล้ายกันเริ่มจาก lava flow, lava flow breccias และ minor interlayered explosion breccias
ที่มีการเรียงตัวเป็นชั้นรูปกรวยบริเวณปากปล่องภูเขาไฟ

หลังจากปฏิกิริยาการระเบิดภูเขาไฟและการสะสมของชั้นหิน early intermediate-composition lavas
ปฏิกิริยาการระเบิดของภูเขาไฟจะเปลี่ยนแปลงเป็นการสะสมตัวของหินซิลิซิก ที่ประกอบด้วย explosive pyroclasts ของ
juvenile pumice ฝ่ำไฟศาลหัวบริเวพื้นที่ภูเขาไฟ โดยทั่วไปลำดับชั้นการทับถมของ silicic tuffs ประกอบไปด้วยชั้นต่างๆ
ของ pyroclastic fall deposits ซึ่งสอดแทรกด้วยชั้นบางๆของ pyroclastic flow และ pyroclastic surge
deposits ที่บริเวณส่วนฐาน ส่วนบริเวณส่วนบนถูกปกคลุมด้วยชั้นหนาของ pumice flow deposit และ rhyolite lava flow
ถักขึ้นไปตามลำดับ เนื่องจากลำดับชั้นของการทับถมมีความเกี่ยวเนื่องกับชั้นตอนการระเบิดของภูเขาไฟ จึงทำให้สามารถแบ่ง
ปฏิกิริยาการระเบิดของภูเขาไฟออกได้เป็น 3 ระยะ คือ 1. ระยะ early air-fall ที่ประกอบด้วยชั้น pumice-fall เป็นหลัก
และสอดแทรกด้วยชั้นบางๆของ pumice flow และ surge จำนวนมาก 2. ระยะ pyroclastic flow ประกอบด้วยหิน
อิกนิมไบต์ และ 3. ระยะ effusive อันเกิดจาก single lava flow

จากตำแหน่งการจัดลำดับชั้นของหินดังกล่าว silicic lavas ในเขตพื้นที่ภูเขาไฟจึงถูกจัดเป็นระยะสุดท้ายของ
ปฏิกิริยาการระเบิดของหินซิลิซิก silicic lavas ที่วางตัวอยู่ทางด้านบนสุดของ pumice cone โดยทั่วไปประกอบกันเป็น
rhyolite lava flow ชุกเดียวและยังสามารถแบ่งย่อยต่อไปได้อีกเป็น 2 ส่วนใหญ่ๆ คือ ชั้น basal obsidian และชั้น upper
stony rhyolite

ปฏิกิริยาภูเขาไฟขั้นสุดท้ายคือ การไหลแผ่ปกคลุมด้วยลาวาของชั้นหิน obvine basalt รอบอาณาบริเวณของเขต
พื้นที่ภูเขาไฟ

จากความสัมพันธ์ระหว่างลำดับชั้นหินภูเขาไฟ ศิลาบรรณา และศิลาเคมี ซึ่งแสดงได้ว่า early intermediat rocks,
silicic rocks (อันประกอบด้วย silicic tuffs และ silicic lavas) และ late basalt ในเขตพื้นที่ภูเขาไฟนั้นเกิด
มาจากการระเบิดของแมกม่าที่แตกต่างกัน และในการตรวจวัดอายุของหิน rhyolitic obsidian (หรือ undevitrified
glass) ที่ยังคงอยู่ในเขตพื้นที่ภูเขาไฟลำนารายณ์ ได้บ่งชี้ว่ามีอายุอยู่ในช่วงตอนกลางถึงปลายยุค Tertiary

ภาควิชา..... ธรณีวิทยา
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ลายมือชื่ออาจารย์ที่ปรึกษา.....
ลายมือชื่ออาจารย์ที่ปรึกษาร่วม.....



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KIATTISAK SONPIROM : FACIES OF THE LAM NARAI VOLCANIC SUCCESIONS IN AMPHOE CHAI BADAN, CHANGWAT LOPBURI. THESIS ADVISOR : ASSOC. PROF. WASANT PONGSAPICH, Ph.D. ; ASSIS. PROF. SOMPOP VEDCHAKANCHANA, M.Sc. 157 pp. ISBN 974-582-610-3

The Lam Narai volcanic field is the large erosional remnant of a once nearly continuous volcanic succession of many different lavas and their related pyroclastics, ranging in composition from basalt to rhyolite. Throughout the volcanic successions of the volcanic field, the general volcanic succession is relatively simple: beginning with intermediate-composition lavas, changed notably to silicic tuffs, subsequently followed by silicic lavas, and ending with widespread basaltic lavas.

The early intermediate-composition lavas presumably represent the initial eruptive activity of the volcanic field composed of basaltic andesite, andesite and dacite. These early volcanic rocks were erupted from numerous scattered local volcanoes as monotonous sequences of mostly lava flows, flow breccias and minor interlayered explosion breccias which usually form as crudely stratified cones at their source vents.

After eruptions of the early intermediate-composition rocks, the major volcanic activity changed notably to explosive eruption of silicic rocks that produced explosive pyroclasts of mostly juvenile pumice and apparently deposited throughout the volcanic field. In general, the deposit successions of silicic tuffs are composed of stratified layers of pyroclastic fall deposits interbedded with small layers of pyroclastic-flow and pyroclastic surge deposits at their basal parts, subsequently overlain by the thick layers of pumice flow deposits at their upper parts, followed by rhyolite lava flows at their tops. As it is believed that the deposit successions are related to the eruption sequence; therefore it is possible to subdivide the eruption sequence into three phases: a) the early air-fall phase producing pumice fall deposits interbedded with a number of small layers of pumice-flow and surge deposits, b) pyroclastic flow-phase producing ignimbrite and c) effusive-phase producing a single lava flow.

According to stratigraphic position, silicic lavas in the volcanic field are thought to be the terminal event or the final phase of silicic eruptive activity. Silicic lavas rested on the tops of pumice cones, in general, are a single set of rhyolite lava flow. A single set of rhyolite lava flow is further subdivided into two main parts: the basal obsidian and the upper stony rhyolite.

The last volcanic activity of the volcanic field is the effusions of olivine basalt that is widespread and flat lying surrounding along the margin of the volcanic field.

The relationship of volcanic successions, petrography and petrochemistry strongly suggests that the early intermediate rocks, the silicic rocks (including both silicic tuffs and silicic lavas) and late basalt in the volcanic field were erupted from different magmas. The evidences of preserved rhyolitic obsidian (or undevitrified glass) and isotope age dating indicate that volcanic rocks in the Lam Narai volcanic field occurred during middle Tertiary to late Tertiary.

ภาควิชา.....ธรณีวิทยา
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ลายมือชื่อผู้ผลิต.....
ลายมือชื่ออาจารย์ที่ปรึกษา.....
ลายมือชื่ออาจารย์ที่ปรึกษาร่วม.....

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