

Tabla de contenido

<i>Capítulo 1. Introducción</i>	1
1. <i>Motivación</i>	1
2. <i>Objetivos y estructura de la tesis</i>	2
3. <i>Publicaciones y resultados presentados en congresos</i>	3
4. <i>Referencias</i>	3
<i>Capítulo 2. Contexto Geológico</i>	6
1. <i>Contexto regional</i>	6
5. <i>Contexto local</i>	8
6. <i>La Ignimbrita Pudahuel</i>	9
7. <i>Referencias</i>	12
<i>Chapter 3. Monazite as a control on Th/U in magmatic zircon</i>	15
1. <i>Introduction</i>	16
2. <i>Geological Setting</i>	17
3. <i>Methods</i>	19
3.1. <i>Sample preparation</i>	19
3.2. <i>U-Th and U-Pb</i>	20
3.3. <i>Zircon trace elements</i>	21
3.4. <i>Accessory mineral temperatures and fO₂</i>	22
4. <i>Results</i>	23
4.1. <i>Cathodoluminescence imaging</i>	23
4.2. <i>U-Th ages</i>	23
4.3. <i>U-Pb and Pb-Th ages</i>	24
4.4. <i>Ti zircon temperatures</i>	24
4.5. <i>Other accessory minerals constraints</i>	24

4.6.	Trace elements	25
5.	<i>Discussion</i>	25
5.1.	Zircon thermometry and oxybarometry	26
5.2.	Monazite controlling Th/U in zircon	27
5.3.	Implications for Th-U ages	30
6.	<i>Conclusions</i>	31
7.	<i>Acknowledgments</i>	32
8.	<i>References</i>	32
<i>Chapter 4: Storage conditions of a caldera-forming volcanic eruption: Insights from the Pudahuel rhyolitic ignimbrite in central Chile (32° 10'S)</i>		44
<i>Abstract</i>		44
1.	<i>Introduction</i>	46
2.	<i>Geologic Setting</i>	48
3.	<i>Methods</i>	50
3.1.	Sample collection.....	50
3.2.	Analytical methods	51
3.3.	Experimental strategy	52
3.4.	Experimental methods	53
3.5.	Selection of run conditions: in-band vs. out-of-band.....	54
3.6.	Approach to Equilibrium	55
4.	<i>Results</i>	56
4.1.	Petrography, whole rock geochemistry and mineral chemistry	56
4.2.	Temperature, fO ₂ and P _{H₂O} constraints from natural samples.....	57
4.3.	Experimental results	58
5.	<i>Discussion</i>	60

5.1.	Pre-eruptive conditions: constraints from mineral indicators	60
5.2.	Pre-eruptive conditions: constraints from experiments	60
5.3.	Storage conditions of Pudahuel eruption	64
6.	<i>Conclusions</i>	66
	<i>Acknowledgments</i>	67
7.	<i>References</i>	82
	<i>Chapter 5. Melt inclusion analyses.</i>	95
1.	<i>Methods</i>	95
2.	<i>Results</i>	96
	Petrography of melt inclusions	96
	Major element compositions.....	96
	Volatiles.....	97
	<i>Chapter 6. Synthesis and conclusions.</i>	108
1.	<i>Storage Age</i>	108
2.	<i>Pre-eruptive conditions</i>	109
3.	<i>Magmatic processes and eruption triggers</i>	110
4.	<i>Potential Hazard</i>	111
5.	<i>Referencias</i>	114